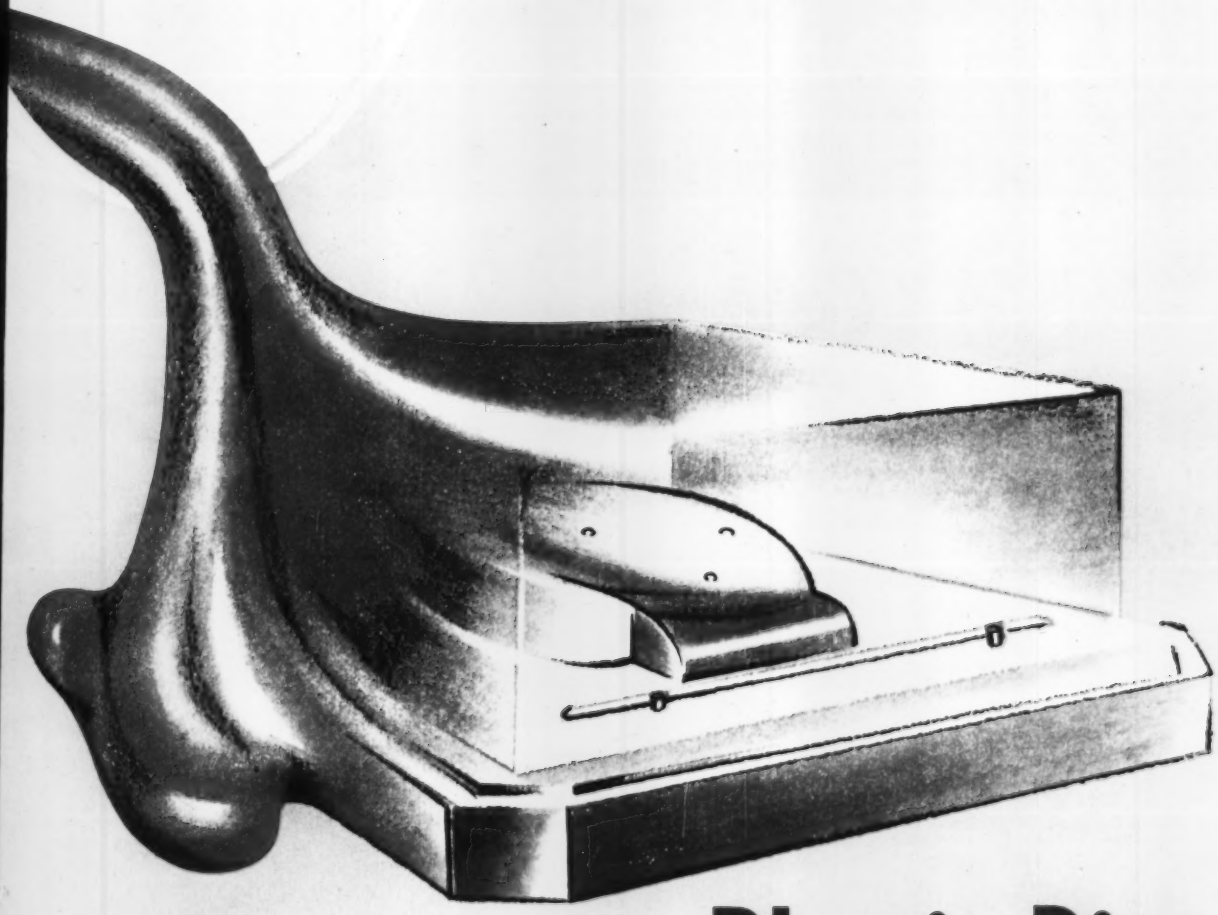
AUGUST 2, 1954

STEEL
THE WEEKLY MAGAZINE OF METALWORKING



Plastic Dies

QUICK TOOL-UP FOR LIMITED RUNS

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Stocks, Deliveries Better, p. 47

✓ **METALWORKING MERGERS**
More Are Coming, p. 49

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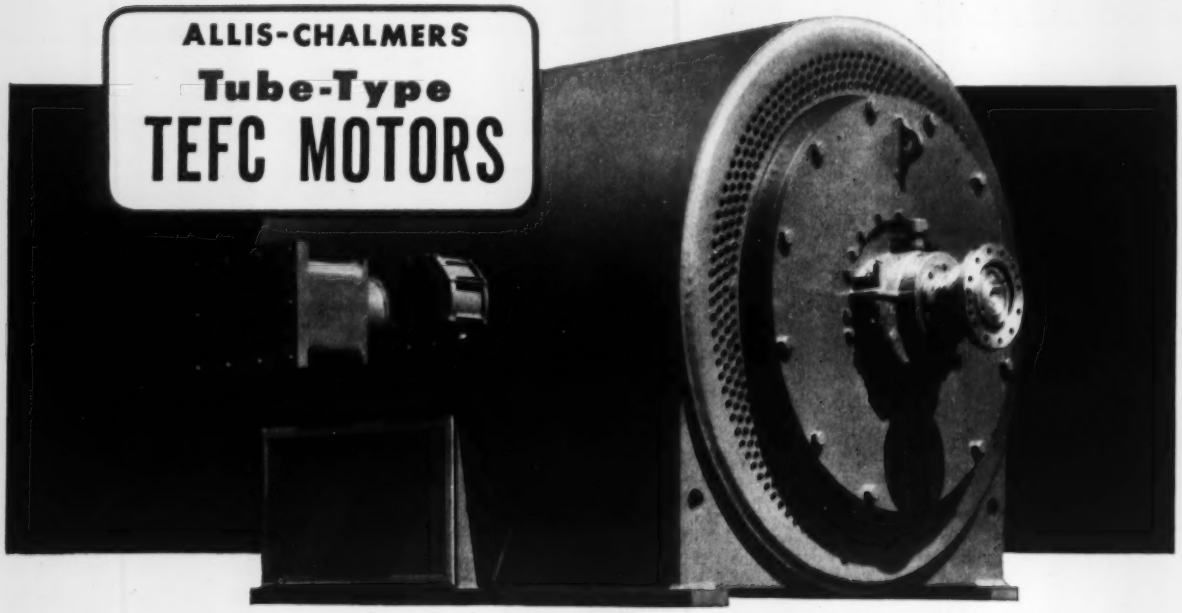
NOW 1250 Hp – 1780 Rpm
Underwriters' Approved
for Class I, Group D Service

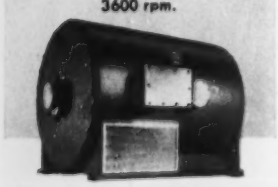
ALLIS-CHALMERS
Tube-Type
TEFC MOTORS



Allis-Chalmers explosion-proof motors as large as 1250 hp, 2300 volts, 1780 rpm are now available with Underwriters' Laboratories, Inc. labels for operation in Class I, Group D hazardous locations.

Previous to recent tests, the Allis-Chalmers Underwriter-approved motor line included ratings up to 800 hp, 3600 rpm for operation in Class I, Group D and Class II, Group F and G locations. Now, with the design used for larger ratings also Underwriters' test-proved, Allis-Chalmers can supply explosion-proof motors in other ratings required by industry.

Ratings up to 800 hp, 3600 rpm.



Construction used for larger ratings.

Explosion-Proof Plus

Operation-proved by TEFC motors totaling over a quarter million horsepower, the A-C tube-type air-to-air heat exchanger design combines safety and maximum operating economy. Self-cleaning action cuts maintenance. Full internal air circulation lengthens insulation life. Complete enclosure protects stator core and other electrical parts from dirt and corrosion.

For approved motors for hazardous dust and gas locations, contact your A-C representative, or write to Allis-Chalmers, Milwaukee 1, Wisconsin.

A-4436

ALLIS-CHALMERS

"I have to bake every slab to a turn"

As you tour the sheet mill at our Sparrows Point plant, one of your first stops will be the control room where the temperatures in the slab reheating furnaces are regulated. Here you'll see Stan, the heater, presiding over an imposing array of recording pyrometers.

Stan's job is a ticklish one. He "soaks" each slab in the furnace to the exact point where it's just right for rolling. Too much heat results in excessive scale, which is wasteful and undesirable; too little heat means low finishing temperatures and an "off" product.

"Look at all the scientific gadgets they've given me," Stan will tell you with a wave of his arm. "But reheating slabs still takes a lot of experience and judgment. And in a mill that's shooting all the time for 100 per cent quality, I have to bake every slab to a turn."

Stan has a point there. For he plays a strategic position on a highly expert team.

Good equipment, good material, and good men—all are essential to make good sheets. The equipment in Bethlehem's sheet mills at Sparrows Point and Lackawanna is second to none. The steel we use reflects all we have learned in a generation of making steel for flat-rolled products. And on the human side, from top supervision all the way through, operations are in the practiced hands of an extraordinarily keen and quality-minded bunch of men.

Like any good team, this one is out to win. Their aim can be stated very simply. It is nothing less than to produce the best hot-rolled and cold-rolled steel sheets made anywhere. With so many other companies turning out an excellent product, that is a tall order.

How is our team doing? Self-praise is unbecoming, and anyone can claim "the best." But this much we can say: our sheet mills at Sparrows Point and Lackawanna are producing sheets that at the very least will stack up favorably with the best the industry is making. Sheets that are as finely finished, as easy forming, as true to gage as any on the market. Sheets as fine as you can buy!

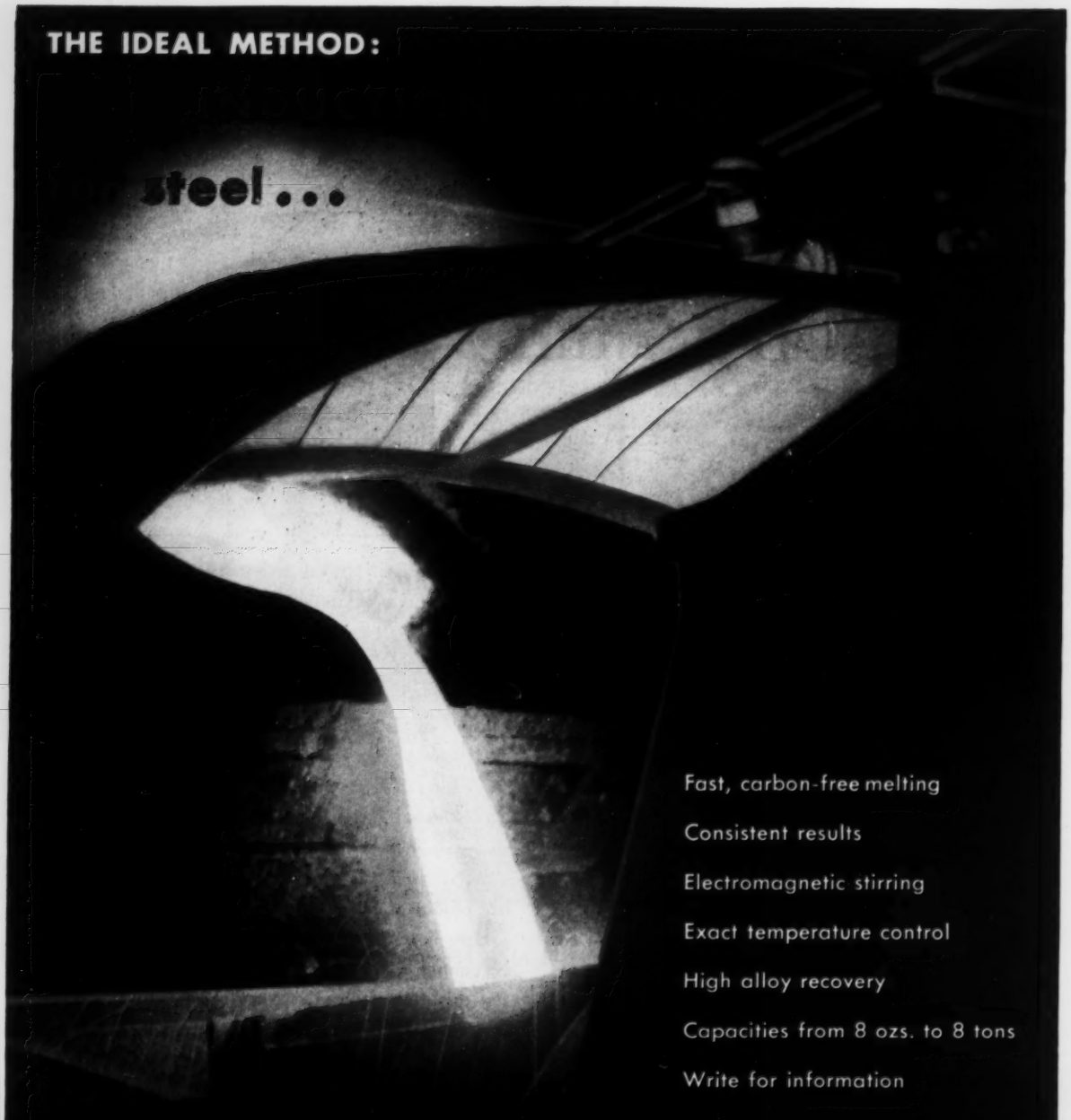
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM SHEETS

THE IDEAL METHOD:

steel...



Fast, carbon-free melting

Consistent results

Electromagnetic stirring

Exact temperature control

High alloy recovery

Capacities from 8 ozs. to 8 tons

Write for information

NORTHRUP SINCE 1916

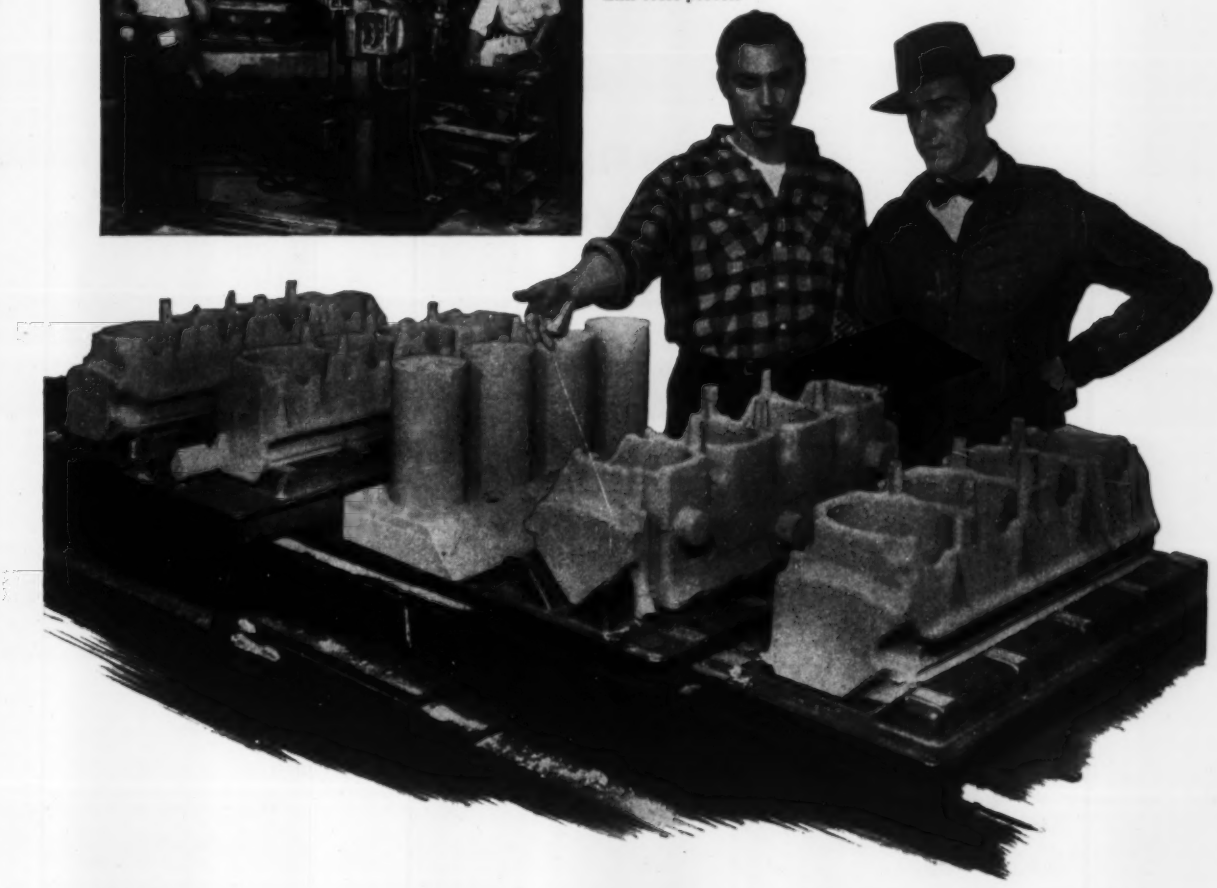
547

INDUCTION ELECTRIC MELTING

AJAX ELECTROTHERMIC CORPORATION • AJAX PARK, TRENTON 5, NEW JERSEY

ASSOCIATED COMPANIES: AJAX ELECTRIC FURNACE CORPORATION • AJAX ELECTRIC COMPANY • AJAX ENGINEERING CORPORATION

Automatic Production *of 5 different cores at one time with Roto-Core. One operator places dryer over blown core boxes, one operator removes blown core. Third operator sets wires and loose pieces.*



50% more cores per manhour . . . improved quality . . . to cut your foundry costs

HERE, five different cores are being produced at one time. The cores are accurate, uniform in quality. But that's not all; the cores are turned out 50% faster to cut this foundry's molding costs.

With Osborn's Roto-Core Automatic, production of cores is *completely automatic* . . . on a preset, repetitive time cycle. The machine is operated by 2 or 3 men that can be trained in a short time.

Substantial reductions in production cost are not unusual with Osborn's Roto-Core Automatic. These savings can be duplicated in your shop and with your present core box equipment. Your Osborn foundry specialist will gladly survey your core blowing operations and demonstrate how you can benefit right now. Write *The Osborn Manufacturing Company, Dept. EE-21, 5401 Hamilton Avenue, Cleveland 14, Ohio.*

OSBORN

Another example of OSBORN leadership and advanced engineering

MOLDING MACHINES CORE BLOWERS

NEW ATOMIC CANNON

Added Evidence that—

Everyone Can Count on VEEDER-ROOT

This mobile 280 mm. atomic cannon has *two* recoil motions. The primary recoil absorbs the cannon's "kick". The secondary recoil (something new in artillery) absorbs the forces created by the primary recoil. And each recoil motion is recorded by this special Veeder-Root Counter designed with a plunger-action shaft . . . which keeps the score on the cannon's use and indicates approaching need for maintenance.

This again points up the fact that "Anything Worth Making — or Worth Doing — *Is Worth Counting*." And Veeder-Root has the experience and resources *you* can count on, to give you any counter you need . . . for any mechanical or electrical application . . . in any field from Atomics to Automation. Write:

VEEDER-ROOT INCORPORATED
HARTFORD 2, CONNECTICUT

Chicago 6, Ill. • New York 19, N. Y. • Greenville, S. C.
Montreal 2, Canada • Dundee, Scotland
Offices and Agents in Principal Cities

"The Name that Counts"

This Week in Metalworking

STEEL
THE WEEKLY MAGAZINE OF METALWORKING

Vol. 135 No. 5 August 2, 1954

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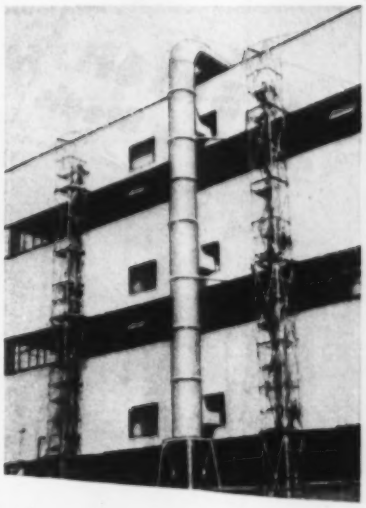


IS A
PLA-TANK® STACK
THE ANSWER
TO YOUR
FUME PROBLEM?

Shown here is a light-weight, easily-erected PLA-TANK stack which handles fume exhaust at the new thorium plant of the Lindsay Chemical Co., West Chicago, Ill.

The stack has a 44" diameter, is 69' long including 90° elbow, cross run to fan chamber and riser beyond fan. There are inlets from three floors to handle exhausts from individual tank systems. Stack was prefabricated with flanges for fast installation.

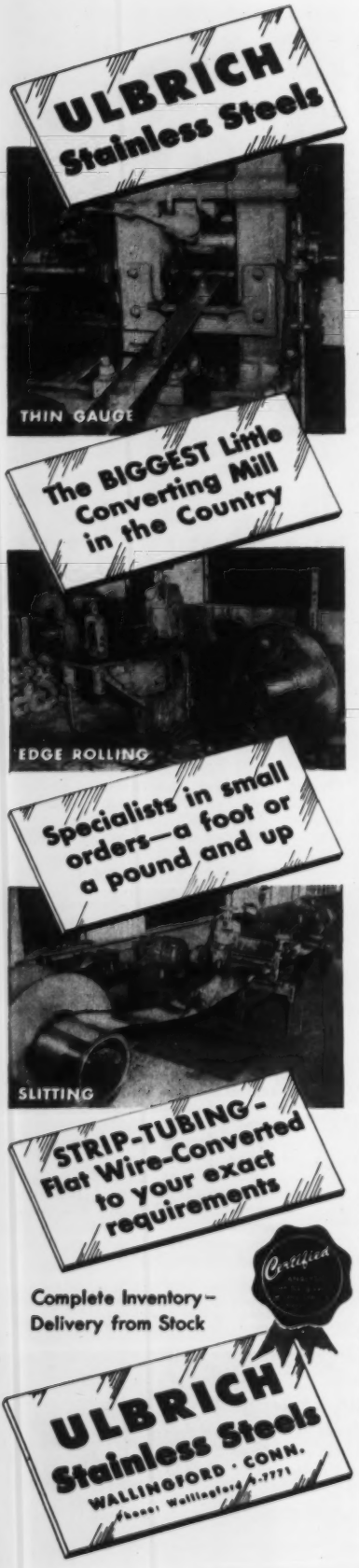
PLA-TANK STACKS may also be the answer to your problem of venting corrosive fumes — inside or out. Consider these many advantages

- . . . manufactured from long-life, resin-bonded glass fiber laminate
- . . . resistant to a wider variety of fumes and temperature than ever before
- . . . not affected by extremes in weather
- . . . light weight, easy to install; need less rigging and support; save handling, freight, shipping charges
- . . . competitively priced; available in diameters to 60"

Let us help you solve your problem the modern way — with PLA-TANK STACKS. Write today for free data sheets.

P-20

THE Chemical CORPORATION
56 Waltham Ave., Springfield 9, Mass.



behind the scenes

Want to be a Critic?

Every so often a high priest of copy-evaluation rises among us, and for a moderate fee can be induced to evaluate your advertising copy. Through the employment of strategems, devices and methods that will leave you behind at the first traffic light, he will solemnly examine your copy, and tell you politely that it stinks.

Now, no advertiser in his right mind would knowingly associate himself with a piece of advertising that—ah—stinks; so if his printed pitch were scientifically measured and found to be malodorous (we just can't go on printing the word "stink") he'd naturally rush out and hire some professional advice. From the professional critic, of course.

It seems to us the only critic who really rates attention in these matters is the reader. Your comments on advertising concerning things you or your company MIGHT purchase should interest the advertiser. So, ever on the alert to be of service to STEEL's important family of readers, Shrdlu rubbed his little pointed head, in lieu of a lamp, and came up with an honest answer to copy-evaluation:

We'll let YOU be a critic! All you have to do is go through this copy of STEEL, clip any ad that engages your attention and interest, and tell us why it might influence your decision to buy. To qualify as a contestant, you must weigh over 40 lbs., be able to pronounce at least three bad words, stand four-square on the institution of motherhood, and have sense enough not to draw three cards to fill an inside straight.

Send your entries to Shrdlu, Penton Bldg., Cleveland 13, O., by parcel post, dog-team, carrier pigeon or U. S. Mail. We'll announce prizes later.

Story Based on Big Return

Interested in planning your business course and charting your buying plans? Then you will be interested in the inventory and delivery situation for the major steel, copper and aluminum products. You can help yourself to some solid inside information on these subjects by turning (not now: wait till we sign off) to page 47. One of the most amazing things about this survey is the fact that STEEL assembles its findings from a 40% return on its questionnaire. Dig that 40%, particularly when 15% or 20% is considered good!

See You By The Bookrack

The Allen Manufacturing Co., Hartford, Conn., distributed questionnaires recently to employees in order to determine whether the reading rack service should be continued. The response was hearty; it even included suggestions for improving the service. The Allen people are now providing additional racks throughout the plant. (Sudden thought: can they fire a man for improving his mind by reading on the job?)

Back To Ohioana

You wouldn't think offhand that a STEEL sales letter would fetch a reply from Walter Rumsey Marvin, Executive Director of the Martha Kinney Cooper Ohioana Library Association; Mrs. Myers Y. Cooper, Founder; Mrs. DePew Head, Director Emeritus—but it did! Walter was very cordial about it, too, which was mighty decent, when you consider that STEEL used the word "Ohioana" just as though it belonged to us. In the sales letter "Ohioana" referred to "the new metalworking state". In Walter's letter "Ohioana" was described as having the same derivation as "Americana". The Ohioana Library Association is currently observing its 25th anniversary. The library is established at 1109 Ohio Departments Bldg., Columbus, Ohio—and do you know what the Association is up to now? It is working on the production of "Anthology of Contemporary Ohio Poetry", and "One Hundred & Fifty Years of Ohio Authors and Their Books."

Shrdlu

(Metalworking Outlook—Page 39)

(Advertisement)

Remington Rand

BETTER BUSINESS METHODS

For Greater Profits Through Lower Costs

Effective Machine Loading System for Maximum Return on each Production Dollar

A good machine loading system should accomplish these objectives: (1) Indicate available machine capacities for handling any new work. (2) Point up bottlenecks and lags. (3) Assure proper sequence of job handling to meet schedules. (4) Control work flow, to process each unit in the shortest possible time, thus keeping work-in-process inventory at a minimum. (5) Control production by measuring performance against an established plan, resulting in better customer service and lower costs.

Remington Rand's Machine Loading System meets these basic needs the fastest possible way...*visibly*. At a glance, Sched-U-Graph visible charting tells you the load ahead of each machine, work station or machine center... the jobs that constitute that load . . . all scheduled starting and completion dates... how much free machine time is available and when it is available.

With the Sched-U-Graph Machine Loader, this system is simple to set up... even simpler to maintain. It's all explained fully in our new folder. Your free copy may easily lead to improving your plant's "Production per Dollar" ratio. Just circle KD738 on the coupon.

Visible Purchasing Records Pay Off!

The Kardex visible purchase history and quotation record and the Follow-Up Folder system installed at the Heywood-Wakefield Company pays off in many ways. This visible control gets material delivered on time, concentrates all information on an order in one place, and helps prevent overextention of both inventories and open orders. Read all about it in Case History 818, offered in the coupon.

Two Proved-in-practice Systems for Tighter Tool Control Provide Seven Time and Money Savings

Here are two simple, sound tool crib control systems that assure tool charge-outs and returns in less than a minute while providing close control and accountability on all tools, jigs and dies.

Mechanized Parts Control Balances 23,000 Separate Items; Cuts Posting Time

Certified Report No. 909 shows how the Cummins Engine Company keeps its vast inventory of 23,000 parts in a neat balance, preventing both production delays and costly overstocking. Robot-Kardex mechanized parts control helps them turn this trick in 30% less posting time ... 59% less space. For all the facts on this fatigue and turnover reducing Robot-Kardex case history, circle CR909 on the coupon.

Both systems start with a three-part form which provides control by tool, control by worker and a worker's copy. From here, the systems branch into control by Kolect-A-Matic or Kardex, depending on whether or not detailed periodic posting of withdrawals and returns is required.

Both systems result in these seven time and money savings. (1) More work hours available. (2) Reduced tool investment. (3) Reduced tool breakage. (4) Reduced tool loss. (5) Reduced tool repairs. (6) Reduced purchasing costs. (7) Simplified allocation of tool costs. For more information on these systems for tighter tool crib control, just circle KD641 on the coupon.

Remington Rand

Room 1848, 315 Fourth Ave., New York 10

Yes, I'd like to have the literature circled.

KD738 CR909 KD641 CH818

Name_____

Title_____

Company_____

Address_____

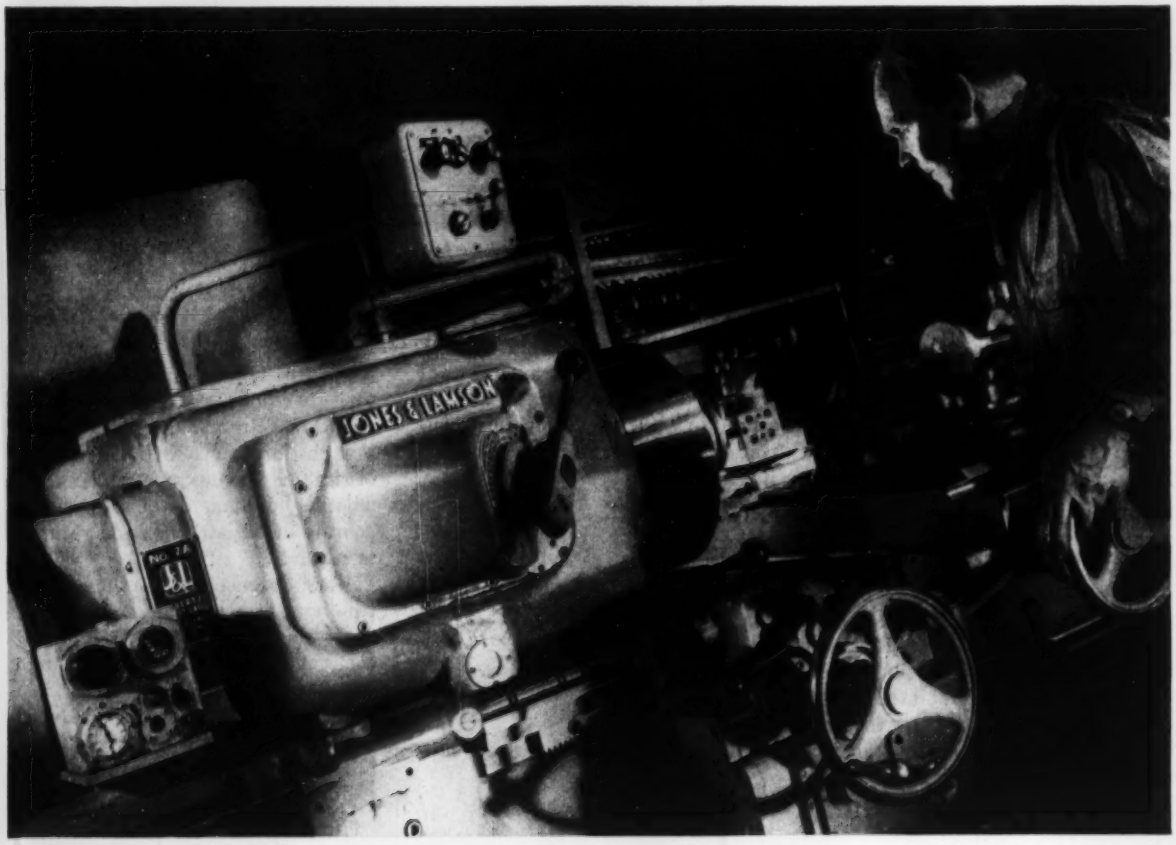
City_____ Zone____ State_____

1-18

—Profit-Building **IDEAS** For Business—

(Advertisement)

TO LEASE OR NOT TO



Jones & Lamson Now Offers a 3-Way Marketing Service that Establishes Top Industry Standards for Sound Practice in Meeting the Variable Needs of Industry.

In developing the provisions of its new vertical-coverage marketing service for machine tool users, Jones & Lamson has drawn upon the most extensive background of production and marketing experience in the industry.

Jones & Lamson's 3-way Marketing Plan is outlined at right, with a brief review of each method.

The Lease Situation Today

The general leasing of capital equipment is relatively new. Despite the publicity and recent impetus it has received, only a small proportion of all privately operated plant equipment is now under lease.

Leasing is not yet general enough to be standardized. There are almost as many forms of contracts as there are clauses. Nevertheless, there will always be a sound basis for the leasing method in our rapidly expanding industrial economy.

Because of these conditions, the tax and legal aspects of many types of rental contracts were studied by Jones & Lamson's marketing division to produce a sound leasing plan that provides the maximum advantage and flexibility for the user.

Says Jones & Lamson's Manager of Marketing, H. A. Finch, "The best contract a customer can have is still the knowledge and integrity of the supplier. This is especially true in the matter of leasing."

LEASE

JONES & LAMSON'S 3-WAY MARKETING SERVICE

To further facilitate the expansion of American productivity and markets, Jones & Lamson now offers *three* plans for the procurement of machine tools.

They are designed to accommodate the widest possible variety of industrial needs, and to establish top industry standards for sound practice.

Outright Purchase

The outright purchase of capital equipment is generally preferred. It offers the obvious advantages to the user of lower cost, freedom of operation, and full profit from the use of the equipment.

"Pay-from-Productivity" Plan

Plans are also offered for those who prefer making payments from the additional savings created by the use of new and modern machine tools, and on terms more favorable than can be obtained from most credit sources.

Payments may be made on a one to five year basis, in equal monthly installments, with a small down payment and a charge at the rate of 3.25 percent on the original unpaid balance.

(Payment Analysis per $1,000. Sixty Monthly Payments)

	Remaining Principal	Total Payment During Year	Total Cumulative Payments
Payment at Shipment	—	—	250.00
End of 1st year	600.00	190.89	440.89
End of 2nd year	450.00	181.89	622.78
End of 3rd year	300.00	172.89	795.67
End of 4th year	150.00	163.89	959.56
End of 5th year	None	154.89	1,114.45

The Lease Plan

Leasing may be advantageous when working capital is inadequate for necessary plant modernization or expansion, and when alternative uses of capital are more pressing or more profitable.

Under the Jones & Lamson plan, the customer gets the normal 1 year guarantee, and he may offer to buy the machine at the end of any year, at the then existing fair market value or at a predetermined option price.

To provide maximum flexibility, the plan is available in four variations, the principal differences being in the annual rental and return charges. With each plan, a 10 percent deposit is required, to be refunded to customers upon fulfillment of transaction. The minimum payment plan is shown below.

(Annual Rental per $1,000 Selling Price)

Year	Rent	Return Charge	Year	Rent	Return Charge
1st	$180	$500	6th	$180	None
2nd	180	360	7th	60	None
3rd	180	240	8th	60	None
4th	180	120	9th	60	None
5th	180	None			

JONES & LAMSON MACHINE COMPANY

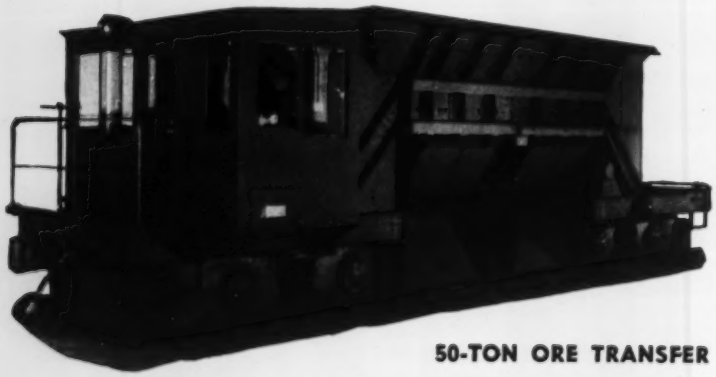
517 Clinton St., Springfield, Vermont, U. S. A.

Turret Lathes—Fay Lathes—Thread & Form Grinders—Optical Comparators—Threading Dies

On the HIGHLINE

It's ATLAS ORE TRANSFERS

It's Atlas Transfers for dependable, year-in, year-out service . . . for operator safety and convenience which approaches semi-automatic service.



50-TON ORE TRANSFER

This Atlas Ore Transfer is equipped with modern hydraulically-operated discharge gates and brakes. Steel plate trucks are provided. The cab is overhung at one side to give the operator a line of vision alongside the car. The car is equipped with electrically heated hoppers.

THE ATLAS CAR & MFG. CO.

ENGINEERS MANUFACTURERS

1140 IVANHOE RD. CLEVELAND 10, OHIO, U. S. A.

LETTERS
TO THE EDITORS

Love That Buyers' Guide

Your staff has done an excellent job in compiling the new "Guide for Steel Buyers." It should prove extremely useful to persons in the metalworking market—and very valuable to those of us who make and sell steel.

M. F. Moncrief
manager
Advertising Department
Atlantic Steel Co.
Atlanta

You are to be highly congratulated on a very fine piece of work. I have over the last 35 years seen a good many of these buyers guides but none can equal your new "Guide for Steel Buyers."

S. W. Terry
vice president sales
Monarch Steel Co.
Hammond, Ind.

Please send 50 copies . . .

F. R. Davis
purchasing agent
Continental Steel Corp.
Kokomo, Ind.

WE HAVE RECEIVED "GUIDE FOR STEEL BUYERS." HOW MAY WE OBTAIN 10 COPIES FOR OUR STEEL PURCHASING GROUP?

Dodge D. L. Shakotko
buyer
Chrysler Corp.
Detroit

I wish to compliment you on the "Guide for Steel Buyers." This is a nice job of cataloguing, and we expect to put it to great use.

F. N. Sefton
vice president
Martin Stamping & Stove Co.
Huntsville, Ala.

We find this booklet a very handy reference and believe that it can be a very definite assistance to buyers generally.

John E. Newlin Jr.
manager steel sales
Henry Disston & Sons Inc.
Philadelphia

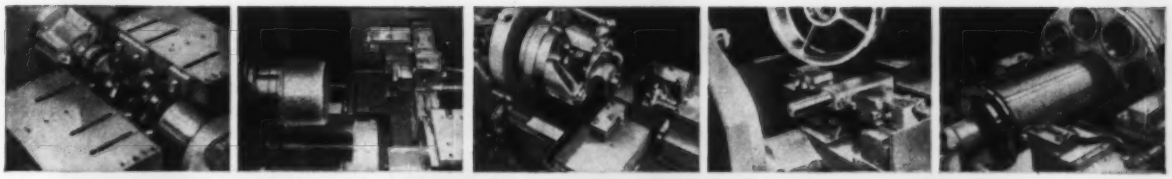
• *Copies have been sent.—ED.*

Hot Spray Addendum

In STEEL we came upon the article on the application of hot spray lacquer (June 21, p. 126).

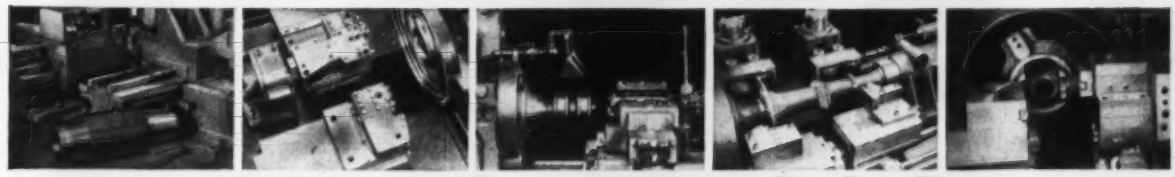
Spee-Flo Co. is either No. 1 or No. 2 in the sale of both industrial and automotive hot spray equipment in the U.S., and you can imagine our amazement to find that Spee-Flo Co. had been left completely out of the list of the five

(Please turn to page 12)

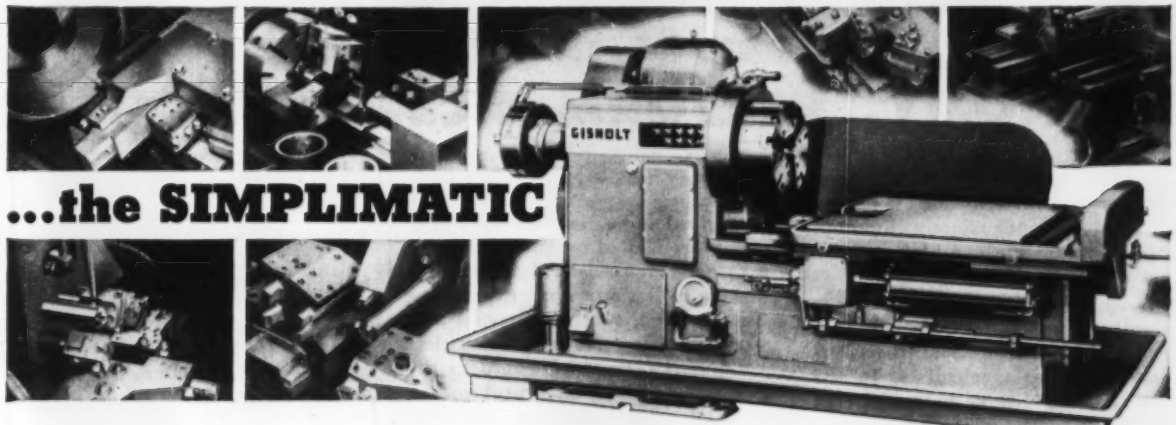


All these different tooling setups

show the amazing versatility



# of this fully automatic lathe



...the SIMPLIMATIC

Here's versatility that beats any automatic lathe you ever saw! Actually, the Simplimatic is doing hundreds of jobs like these—jobs that would otherwise be put on *special* machines—built at extra-special cost. But this (and don't miss the important point!) is a *standard machine*—at a *standard price.*

If you have medium or long runs on parts up to 33½" in diameter, get the facts about the Simplimatic Automatic Lathe.

GISHOLT MACHINE COMPANY

Madison 10, Wisconsin

TURRET LATHES • AUTOMATIC LATHES
SUPERFINISHERS • BALANCERS • SPECIAL MACHINES

THE GISHOLT ROUND TABLE

represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.

THIS CATALOG may show you how the Simplimatic can save thousands of dollars for you as it is doing for many others. Write for your copy.

Gisholt Machine Co.
Madison 10, Wisconsin
Gentlemen:

Please send my copy of the Simplimatic Catalog.

Name.....*Title*.....

Company.....

Address.....

City.....*Zone*....*State*.....

tops in STAMINA, ECONOMY, PERFORMANCE

LOADMASTER Cranes make good on every installation—that is proven not only by enthusiastic comment from owners, but by a high percentage of repeat orders.

Take Tool Steel Gear & Pinion Company of Cincinnati, Ohio—world-famous heat treat specialists and precision machinists. In the spring of 1952 three industrial type Bedford overhead cranes were installed in their new Plant No. 2, north of Sharonville, Ohio. A year later when they needed a new crane in the heat treat room at their Elmwood plant, they installed their fourth Bedford crane.

Bedford industrial and steel mill cranes are backed by more than half a century of specialized crane engineering and fabricating experience. They are available in all types and sizes from 5-ton to 350-ton capacities.

Consult a Bedford engineer on your next overhead crane problem . . . with all the facts on the table, we believe you too will make your next crane a Bedford.

(Write for brochure describing Bedford Cranes in detail)

Pittsburgh Office: Oliver Building, Room 1241
Phone ATlantic 1-0136

New York Office: 280 Madison Avenue
New York 16, N. Y. Phone MUrray Hill 5-0233

BEDFORD CRANES SERVICE

ENGINEERED CRANES

BEDFORD

BEDFORD FOUNDRY & MACHINE COMPANY, INC. · BEDFORD, INDIANA

LETTERS

(Concluded from page 10)

or six manufacturers of hot spray equipment mentioned.

The prestige and position of your fine magazine is indicated by the fact that word of the omission has come to us from all over the country, and I trust you can understand our position.

We noted your editorial comment on hot spray application and are, of course, in full accord with it.

Gustave S. Levey
Spee-Flo Co.
Houston

• *You are right, Spee-Flo is one of the major manufacturers of hot spray equipment. We are sorry you were inadvertently left off the list.—ED.*

Case for Cold Heading

Please send six tear sheets of "The Case for Cold Heading" (July 12, p.110).

Metallurgical Laboratory
Minneapolis-Moline Co.
Minneapolis

• *Sent.—ED.*

Interest in Apprentices

Recently while reading your "Letters to the Editor" column I came across a reader's request for copies of an article that I also thought was well worth passing on.

I certainly would appreciate receiving five copies of "Apprentices: Assurance of Skilled Labor Tomorrow" (May 3, p. 65). You may be sure that the material will be well distributed.

M. L. Quigley
Lyndhurst, N. J.

• *Sent.—ED.*

Machining Without Machines

We are very interested in the process described in "Machining Without Machines" (July 12, p. 109) and would like more information regarding it.

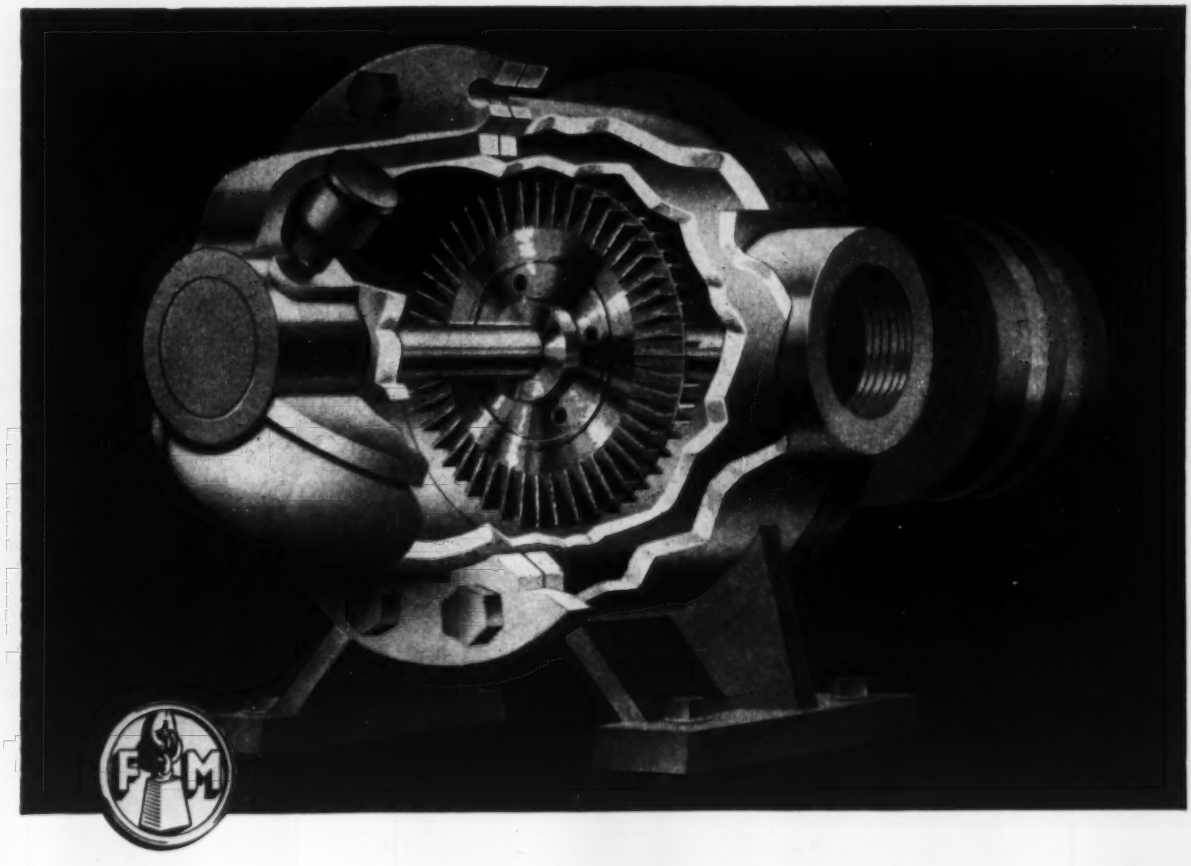
Norman R. Rowe
Northern Engraving & Manufacturing Co.
LaCrosse, Wis.

In your July 12th issue (p. 109) you had articles on "Machining Without Machines" by an etched process and "New Clad" relative to a vacuum-fitted, thin bronze-type bonding layer of steel.

We would like to know sources of further information on these subjects.

J. B. Brennan
Brennan Laboratories Inc.
Cleveland

• *For more information on "Machining Without Machines" we suggest you contact Ohmite Mfg. Co., 3603 Howard St., Skokie, Ill. For "New Clad," Chicago Bridge & Iron Co., McCormick Bldg., Chicago.—ED.*



Its heart is its one moving part . . .

With castings in quality as well as in quantity, National Bearing Division helps its customers make better products.

When a leading pump manufacturer entrusts National Bearing Division with producing vital pump components, and producing them to the exacting standards required, there are some important reasons why.

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National Bearing Division was picked to supply castings for the very heart of this Fairbanks, Morse Turbine Pump...because of an often demonstrated ability to mass-produce non-ferrous castings to a high standard of uniformity and quality.

If your product requires non-ferrous components, it will pay you to investigate National Bearing Division. We have the foundry facilities and skills that can make important contributions to your product performance... with castings *in quality* as well as quantity. *The end result may well save you money, too!*

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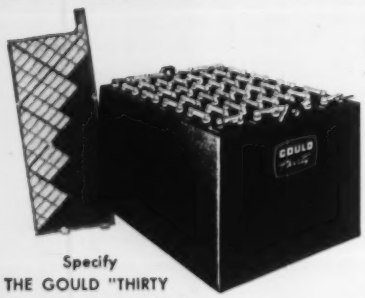

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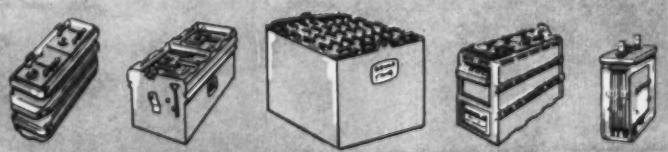

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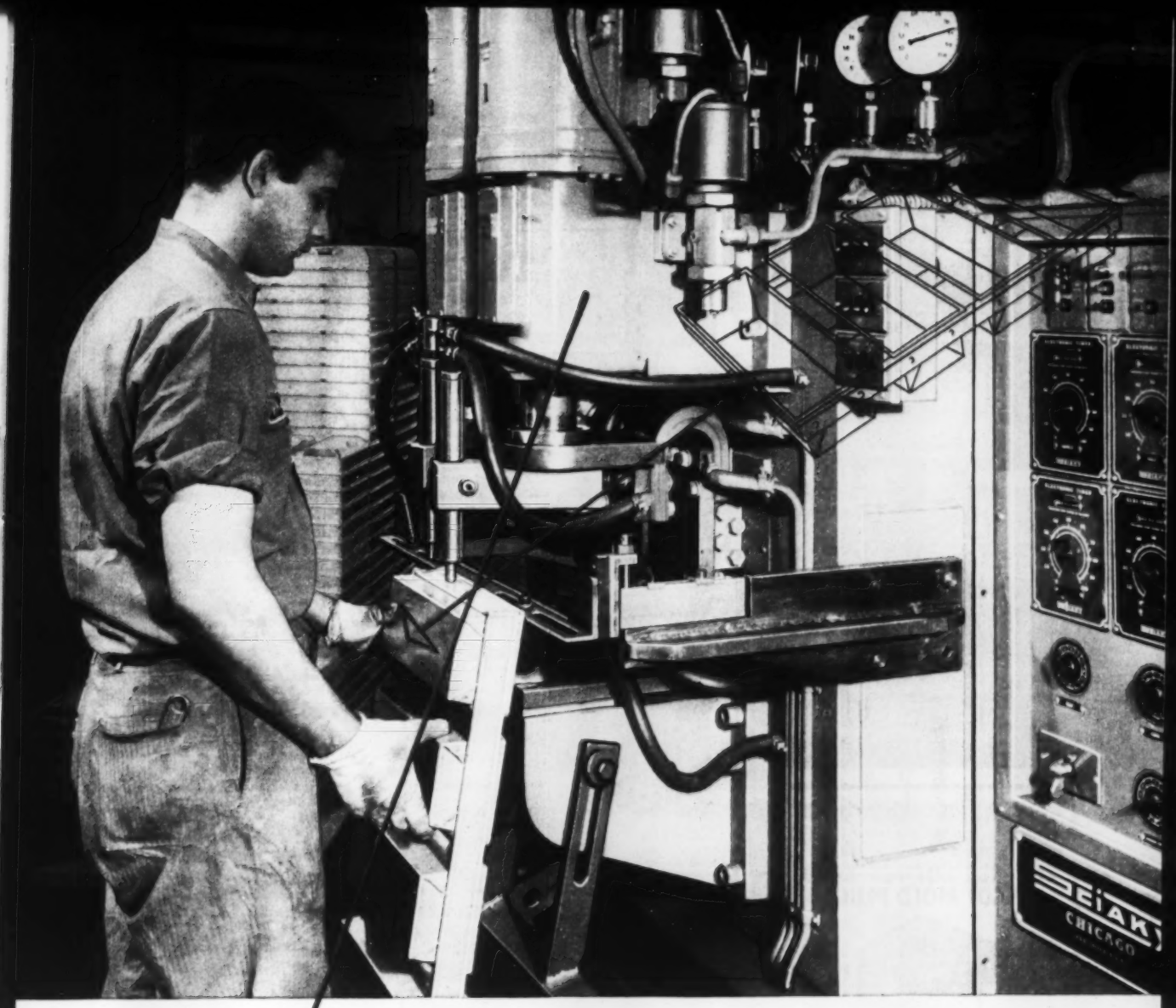

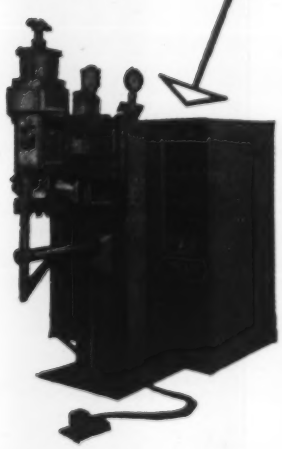

Sciaky Three-Phase Spot Welding Cuts Cost of Stronger, More Sanitary, Aluminum Bread Pans

The Lockwood Mfg. Co., Cincinnati, Ohio, active in the development of aluminum bread pans for the commercial baking industry, uses Sciaky patented Three-Phase spot welding to maintain the quality their reputation demands.

The Three-Phase principle of operation, pioneered and invented by Sciaky, offers many distinct advantages over conventional single phase—such direct savings as lower installation costs, lower power costs, no expensive current compensators, greater welding consistency, and longer electrode life.

Sciaky Three-Phase is acceptable to many, many installations where single phase is not. Write for the complete Three-Phase story in Bulletin 137.

Lockwood's use of Sciaky Three-Phase welders is completely described in "Resistance Welding at Work," Vol. 3 — No. 10. Another fine example of Sciaky basic thinking — welders designed to do *more useful work* at *lower operating cost* with *maximum reliability.*

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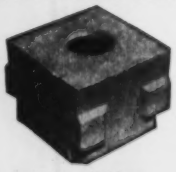

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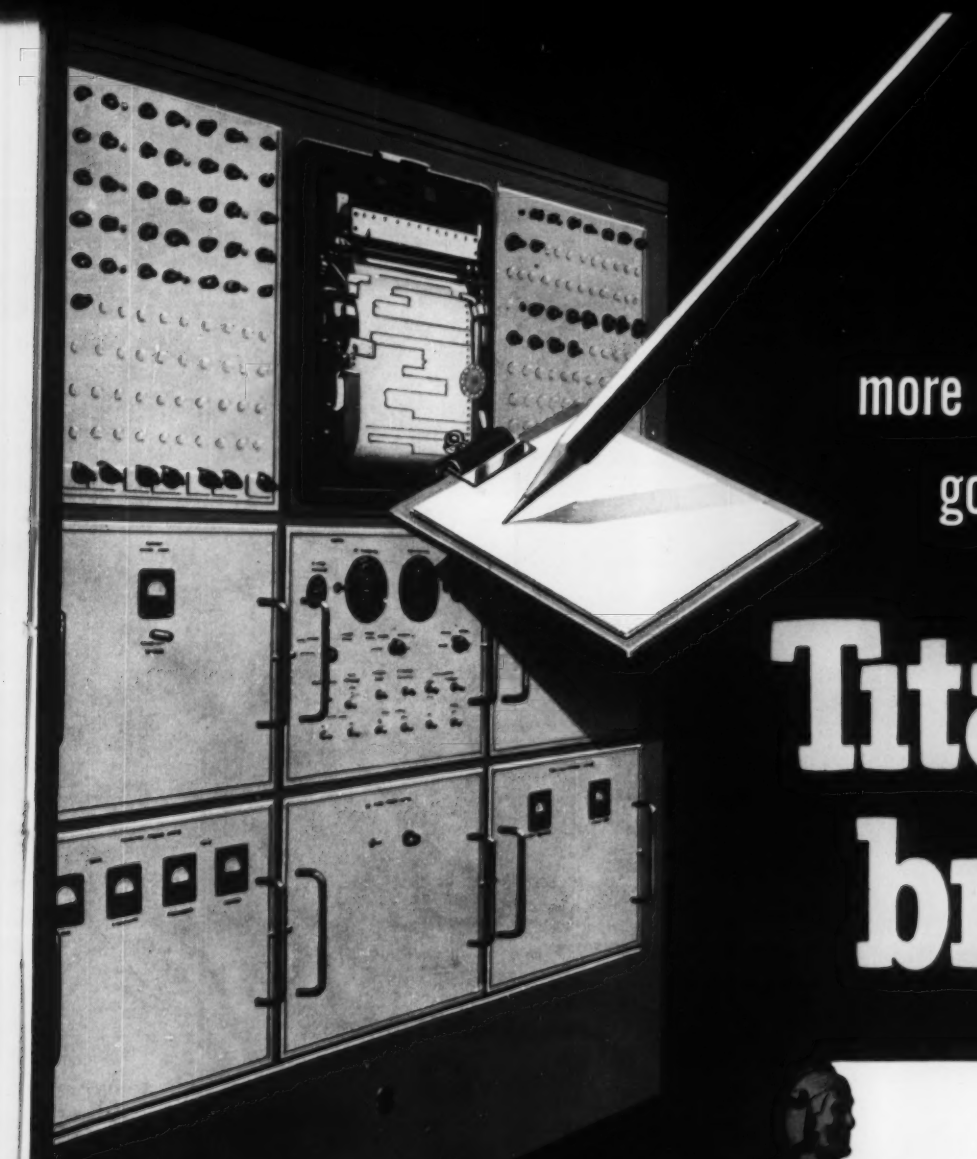

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Titan pioneered in the brass industry one of the most accurate instruments for precise raw-material selection and rigid production control. It is the Quantometer, a truly advanced electronic "brain" which makes a complete analysis of copper-base alloys in two minutes—a job taking several hours by the usual chemical method!

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Write for more data on free-cutting brass rod and other Titan products. You can profit by using brass.

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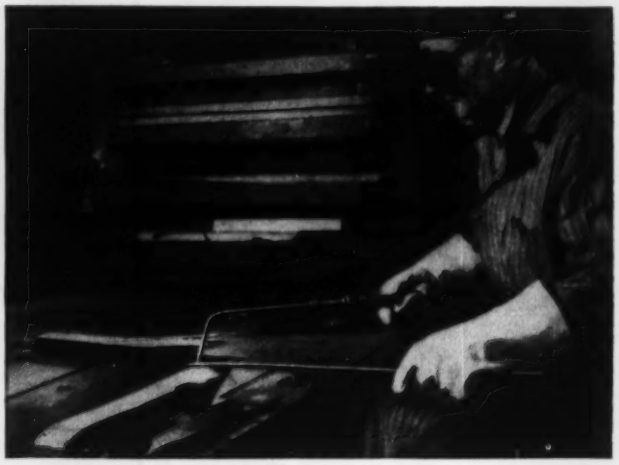

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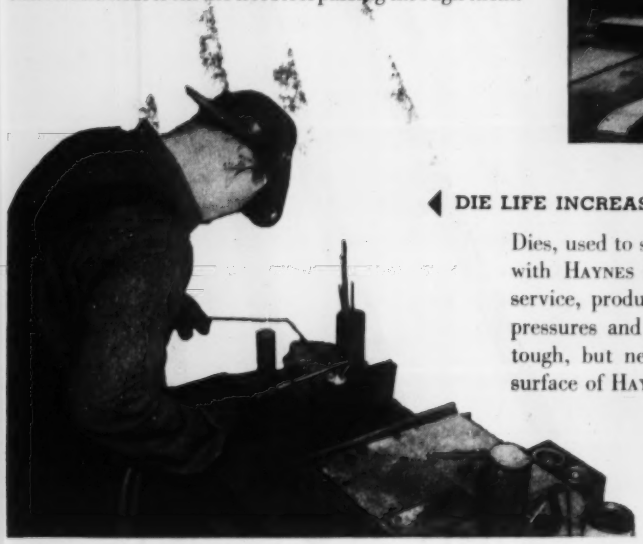
Hard-facing these entry guides with a wear- and heat-resistant HAYNES STELLITE alloy increases their service life from 4 to 5 times. Unprotected guides failed after handling only 40 tons of hot steel bars, while the ones protected with HAYNES STELLITE alloy handled up to 200 tons. The guides are subjected to continual abrasion and heat from the hot steel passing through them.



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Dies, used to shape refractory tile, last 5 times longer when hard-faced with HAYNES STELLITE alloys. Hard-faced dies have given 10 years' service, producing up to 500,000 tiles. The dies have to resist high pressures and abrasion from dry press operations. Unfaced dies are tough, but need the wear-resistance gained from a hard, protective surface of HAYNES STELLITE alloys.

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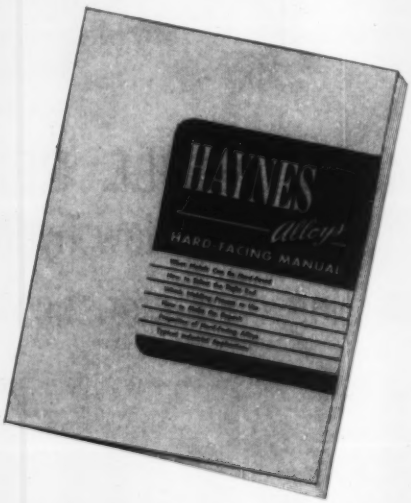
There are 14 different HAYNES hard-facing alloys. Some are hard and abrasion-resistant, some are tough and ductile, capable of withstanding the shock of severe impact; others give extraordinary service under conditions of corrosion, erosion, and heat. Descriptions of each alloy and procedures for applying it are included in the booklet, "HAYNES Alloys Hard-Facing Manual." Write today for your free copy.



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Sharp knives are a necessity for satisfactory shearing, especially on very light gauges. Remember, changing knife clearance does not sharpen dull knives. We suggest you write for data sheet on knife life.

Write for Catalog S-6... describing Cincinnati Shears

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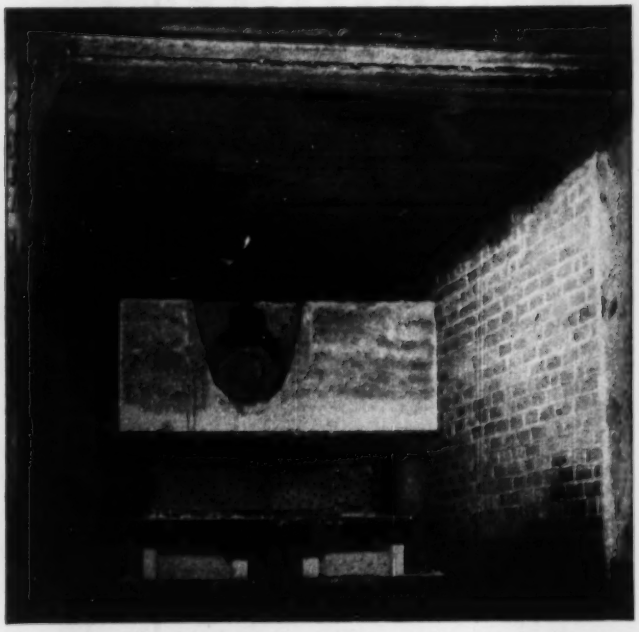
NOW... Pre-cast Core Oven Roof Sections of REFRACTORY CONCRETE



Pre-cast roof sections of refractory concrete shown in place on completed core oven at Penn Steel Castings Company, Chester, Pa.

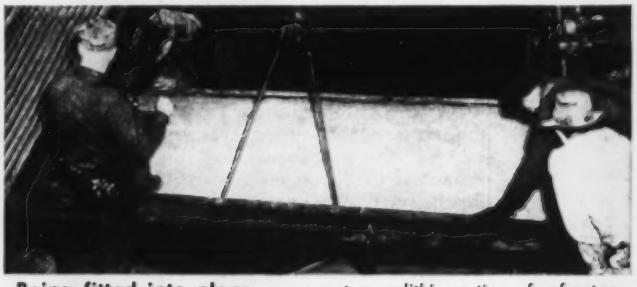
Pennsylvania Plant Takes Advantage of New Pre-Casting Technique

Flat-arch core oven roofs can be pre-cast quickly and easily with a new technique like the one used at Penn Steel Castings Company, Chester, Pa. (see photos). In this case, plant personnel cast monolithic roof sections on the job, then lowered these panels into place to complete the flat arch.

Refractory concrete makes possible special panels like these, and this is only *one* of the many ways that Lumnite* calcium-aluminate cement serves Penn Steel Castings Company. It stops heat loss in annealing furnaces and pits... insulates annealing car bottoms... serves as core oven floors. With Lumnite cement and suitable aggregates, refractory concrete can be made to take temperatures up to 2600°F., or more. Repairs can be made rapidly because refractory concrete aids easy placement and reaches service strength in 24 hours!

FOR CONVENIENCE, you may prefer to make refractory concrete with prepared castables (packaged mixes of Lumnite Cement and aggregates selected for specific temperature and insulation service – add only water). They are made and distributed by refractory manufacturers. For more information, write Lumnite Division, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

Plant personnel have put finishing touches on one cast panel. Moving into position is an I-beam frame with reinforcing for another panel.



Being fitted into place, a pre-cast monolithic section of refractory concrete shows this method's convenience of handling.

"LUMNITE" is the registered trade-mark of the calcium-aluminate cement manufactured by Universal Atlas Cement Company.

S-L-91

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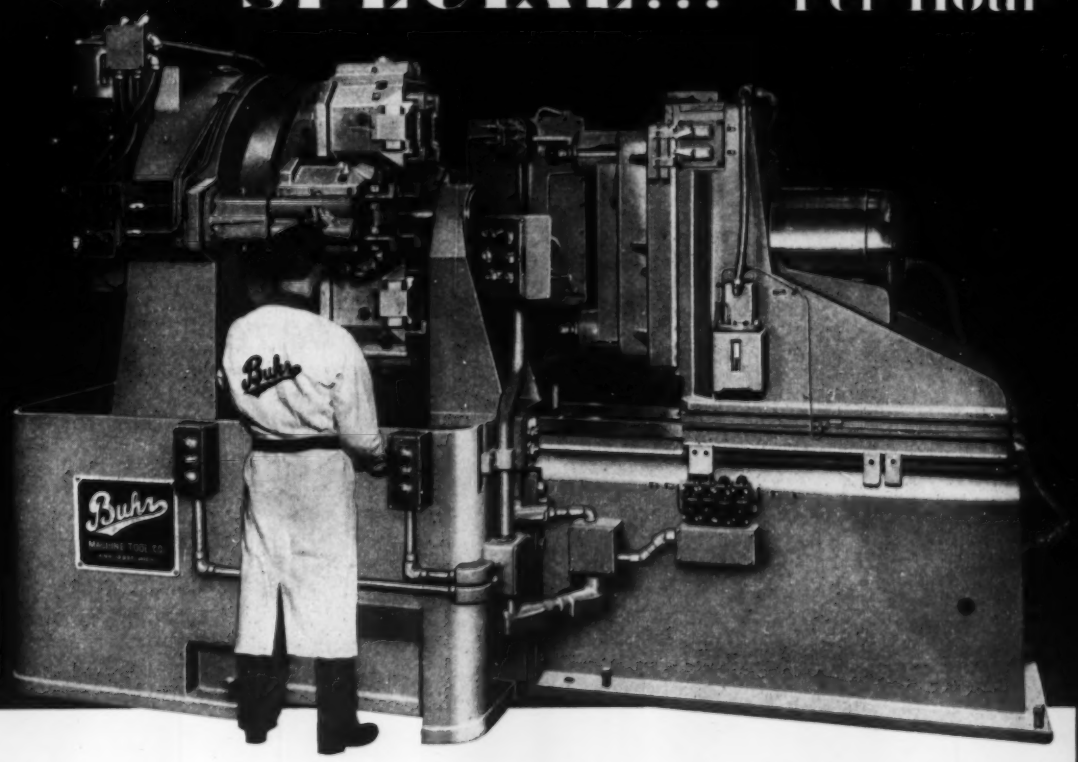

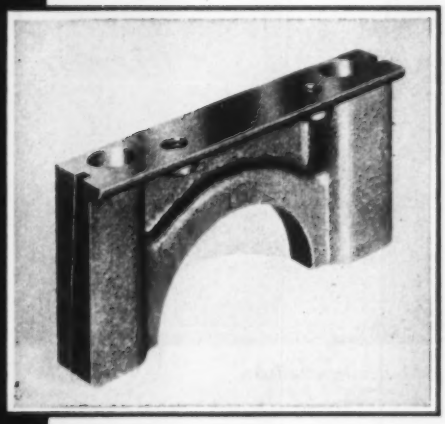

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Operation: Loading two parts. Station 1 — Load and Clamp.
Station 2 — Tap (2) 5/16-18 Holes and mill two Slots.
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As with all Buhr Specials, fixtures are completely interchangeable, hydraulic and electrical installations to J.I.C. Standards, tool steel laminated, hardened and ground ways. Automatic lubrication throughout Machine.

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This BBZ-201 is a much brighter zinc right out of the barrel
PLATEMANSHIP
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This improved H-VW-M BBZ-201 is a much better, more convenient and economical bright zinc process for barrel plating. Improved . . . in its overall deposit brilliance, even in deep recesses. Improved . . . in its ease of handling because of its lower concentration. Improved . . . by a new treatment to eliminate dusting.

Your parts will not only look brighter, but they'll stay brighter longer, because BBZ-201 has a higher resistance to oxidation and tarnish. In many cases subsequent bright dipping can be eliminated. It also has an unusual tolerance for impurities – readily accepts conversion coatings – and can be soldered with relative ease. Then too, low concentration in the bath – plus low consumption–add up to real economy.

Bright zinc barrel plating with BBZ-201 is only one result of H-VW-M's constant progress for more than eighty years. It's a continuous policy, best summed up by the word Platemanship – your working guarantee of the best that industry has to offer, not only in plating processes, but in every phase of plating and polishing.

8835

Photo courtesy of H. L. Judd Co., Wallingford, Conn.

For full information on H-VW-M's BBZ-201 ask for Technical Instruction Bulletin.

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OF MEETINGS

August 2-4, National Tool & Die Manufacturers Association: Board of trustees and committee meeting, Grand hotel, Mackinac Island, Mich. Association address: 907 Public Square Bldg., Cleveland 13. Executive secretary: George S. Eaton.

August 8-12, American Society of Sanitary Engineering: Annual meeting, Muehlebach hotel, Kansas City, Mo. Society address: 4716 Ewing Ave. S., Minneapolis. Secretary: Walter A. Dunn.

August 16-18, Society of Automotive Engineers Inc.: National West Coast meeting, Hotel Statler, Los Angeles. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

August 19-20, American Management Association: Briefing session on the new tax law, Hotel Statler, New York. Association address: 330 W. 42nd St., New York. Vice President-secretary: James O. Rice.

August 25-27, Western Electronic Show & Convention: Pan Pacific Auditorium and Ambassador hotel, Los Angeles. Business manager: Mal Mobley Jr., 344 N. La Brea Ave., Los Angeles 36.

August 30-September 3, Automotive Electric Association: Annual fall meeting, Vanss Springs hotel, Vanss Springs, Alberta, Canada. Association address: 802 Michigan Bldg., Detroit. Executive secretary: S. W. Potter.

September 1-16, International Electrotechnical Commission: Golden jubilee meeting, University of Pennsylvania, Philadelphia. Information: D. E. Denton, Public Relations Dept., American Standards Association, 70 E. 45th St., New York 17.

September 4-8, Pressed Metal Institute: Annual fall meeting, Manoir Richelieu hotel, Murray Bay, P.Q., Canada. Institute address: 2860 E. 130th St., Cleveland. Managing director: O. B. Werntz.

September 7-9, Industrial Truck Association: Fall meeting, Greenbrier hotel, White Sulphur Springs, W. Va. Association address: Washington Loan & Trust Bldg., Washington 4. Secretary: William Van C. Brandt.

September 7-9, National Fluid Power Association: Fall meeting, Hotel Commodore, New York. Association address: 1618 Orrington Ave., Evanston, Ill. Secretary: Barrett Rogers.

September 8-10, American Society of Mechanical Engineers: Fall meeting, Schroeder hotel, Milwaukee, Wis. Society address: 29 W. 39th St., New York. Secretary: C. E. Davies.

September 8-10, Porcelain Enamel Institute Inc.: Shop practice forum meeting, Urbana-Lincoln hotel, Urbana, Ill. Institute address: 1346 Connecticut Ave. N.W., Washington 6. Secretary: John C. Oliver.

September 10-11, Metal Powder Association: Fall closed meeting, The Homestead, Hot Springs, Va. Association address: 420 Lexington Ave., New York 17. Secretary: Robert L. Ziegfeld.

September 11-14, Packaging Machinery Manufacturers Institute: Annual meeting, Grove Park Inn, Asheville, N. C. Institute address: 342 Madison Ave., New York 17. Secretary: Miss Helen L. Stratton.

September 12-15, National Metal Trades Association: Eastern plant management conference, Sagamore hotel, Lake George, N. Y. Association address: 122 S. Michigan Ave., Chicago 3. Secretary: Charles L. Blatchford.

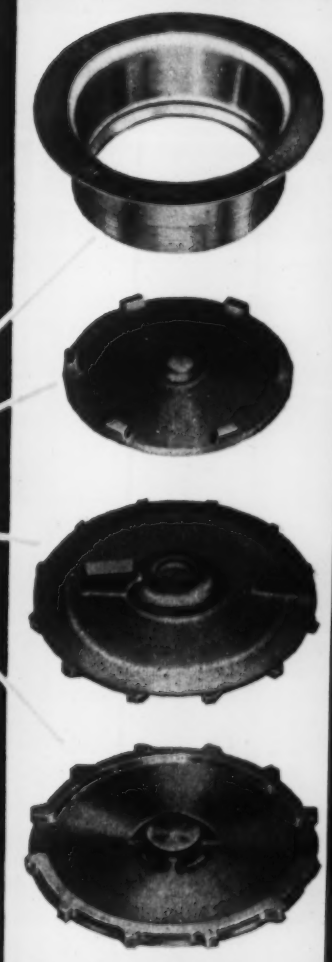
September 12-17, American Chemical Society: Fall meeting, Statler hotel, New York. Society address: 1155—16th St. N. W., Washington 6. Executive secretary: Alden H. Emery.

September 13-14, American Coke & Coal Chemicals Institute: Annual meeting, The Homestead, Hot Springs, Va. Institute address: 711 14th St. N.W., Washington 5. President: Samuel Weiss.

September 13-15, Allied Railway Supply Association: Annual meeting and exhibit, Hotel Sherman, Chicago. Association address: 1200 W. Chase Ave., Chicago 26. Secretary: C. F. Weil.

MUELLER BRASS CO. forgings* contribute to the efficiency of this modern waste disposal unit

***MUELLER BRASS CO. facilities include: designing, die-making, forging, tooling, machining, polishing, plating and assembly**



Three Mueller Brass Co. forgings play an important part in the fine operating performance of this modern waste disposal unit made by the Eureka-Williams Co., Division of the Henney Motor Co., Inc. This unit does a speedy and thoroughly effective job of pulverizing garbage and has made life easier for American housewives. The impeller disposer that chops up the waste food in the disposal unit, the disposer cover and the sink mounting flange are all forged by the Mueller Brass Co. This is another outstanding instance where Mueller Brass Co. forgings have improved product performance and cut costs. High quality forgings can be produced from standard and special brass, bronze and aluminum alloys. And in addition, the Mueller Brass Co. offers complete service ranging from product design to finished part . . . Write today for complete information and new 32 page forgings handbook.

1. Sink mounting flange, forged, machined, nickel and chrome plated by Mueller Brass Co.
2. Machined and finished disposer cover forging.
3. Cutting side of impeller disposer forged from 600 series bearing bronze.
4. Reverse side of impeller disposer.

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of
GREY IRON CASTINGS

ONE OF THE NATION'S
LARGEST AND MOST MODERN
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ESTABLISHED 1866

THE WHELAND COMPANY

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All-Purpose Solvent for Vapor Degreasing

First solvent produced to give unsurpassed performance in any degreasing job—available after August 1, 1954

Now—for the first time—you can buy *one* brand of trichlorethylene with complete confidence that it will do *any* of today's difficult vapor degreasing jobs—quickly and efficiently. That *one* brand is Du Pont's *new* "TRICLENE"* D trichlorethylene.

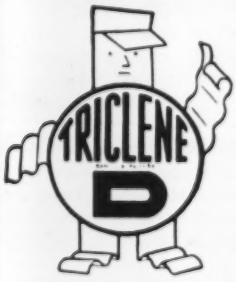
With the greatest all-around ruggedness ever built into a trichlorethylene, *new* "TRICLENE" D gives you unsurpassed resistance to *all* (not just a few) major causes of solvent breakdown. This means dependable performance and operating economy in *any* vapor-degreasing job—in any vapor degreaser.

You profit from fewer work interruptions for clean-outs. You have maximum protection against costly rejects due to solvent staining or etching. And *new* "TRICLENE" D retains its high purity and stability even after repeated use and distillation. All these advantages, and there's only *one* brand of trichlorethylene to stock—all-purpose "TRICLENE" D.

Try *new* "TRICLENE" D and see for yourself why it is considered to be the greatest improvement ever made in any trichlorethylene for vapor degreasing. For more details, fill out and mail coupon below.

*REG. TRADE-MARK

ONLY NEW "TRICLENE" D HAS THE ALL-AROUND RUGGEDNESS TO ASSURE YOU:



Unsurpassed resistance to attack from light metal chlorides (i.e., aluminum chloride).

Unsurpassed resistance to attack from light, heat and air.

Unsurpassed resistance to attack from acidic materials, such as detergents, drawing compounds, sulfurized oils, etc.

Unsurpassed freedom from salt-forming inhibitors and materials that cause staining or deposits on most metals.

Unsurpassed stability, even after long performance in tough degreasing jobs and after repeated distillation.

New All-Purpose

"TRICLENE" D

Trichlorethylene

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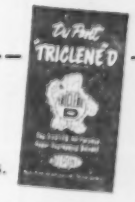

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Corrugated . . . Flexible . . . Jointless Tubing

HERE'S A JOB just "made" for Penflexweld: the steam lines of a paper laminating machine. Steam pressure—100 psi . . . machine movement—1/4" *constantly* . . . vibration—terrific. The Penflex Engineer recommended braided Penflexweld Tubing with Metseal couplings.

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FLEX

HEART OF INDUSTRY'S LIFE LINES

NEW! Norton Cast ALUNDUM* Tumbling Abrasive

Cuts faster and lasts longer... saves you time and trouble... adds the profit-boosting "TOUCH of GOLD"

Cast ALUNDUM abrasive, a typical Norton development for better finishing, is produced in these blocky shapes. It is sharp, dense, hard and non-fracturing.

Cast ALUNDUM tumbling abrasive, newest Norton electric furnace product, is now available to help you cut the time and costs of finishing many of your parts.

Expertly engineered to strengthen the qualities most important to efficient tumbling, cast ALUNDUM abrasive is characterized by:

- *Extreme Sharpness,* which increases cutting speed, reduces tumbling time and expense.
- *Great Density,* which means slower breakdown, longer service life and more work done.
- *Extra Hardness,* which means no fracturing. This eliminates the costly, time-consuming chore of cleaning out chips or slivers that have lodged in the parts being tumbled.

*Trade-Mark Reg. U. S. Pat. Off. and Foreign Countries

Thorough field testing has proved that these *engineered* advantages of cast ALUNDUM abrasive produce about 10% faster cutting speed and 40% slower breakdown than older types of tumbling abrasive. Why not add these profit-increasing "Touch of Gold" benefits to your own finishing operations?

See Your Norton Distributor
for further facts on cast ALUNDUM tumbling abrasive, now ready for prompt delivery in sizes OOT (1½-2″), OT (1-1½″) and IT (¾-1″). Or write to NORTON COMPANY, Worcester 6, Mass. Distributors in all principal cities, listed under "Grinding Wheels" in your classified phone directory. *Export:* Norton Behr-Manning Overseas Incorporated, Worcester 6, Massachusetts.

Making better products... to make other products better

G-278

NORTON

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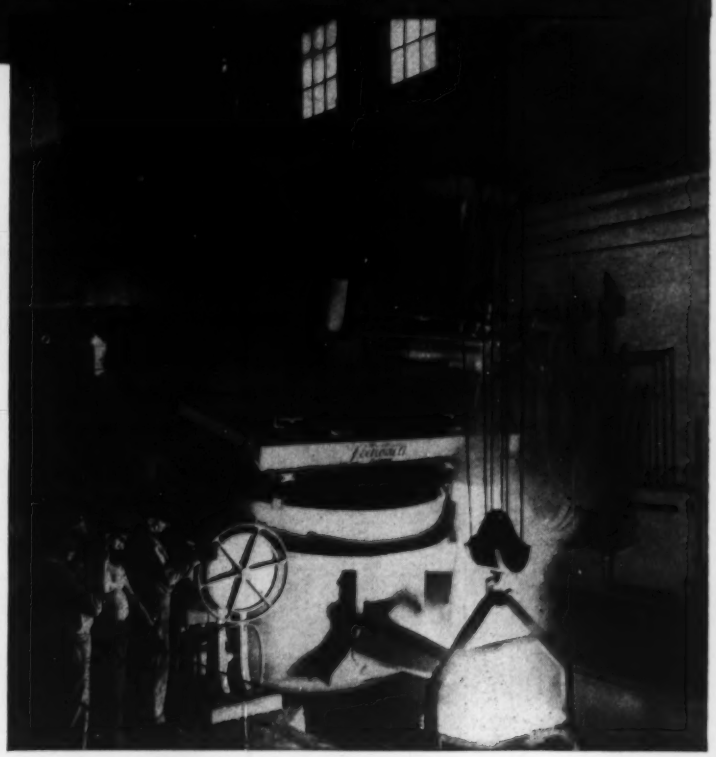
NORTON: Abrasives • Grinding Wheels • Grinding Machines • Refractories
BEHR-MANNING: Coated Abrasives • Sharpening Stones • Pressure Sensitive Tapes

if you judge a furnace on performance...

For 32 years Empire Steel Castings, Inc., has depended on this Lectromelt Furnace. Rated at 1½ tons, it consistently pours 2½ to 3-ton heats.

New 5-ton Lectromelt Furnace at Empire pours a high-quality stainless-steel heat.



A rugged, 32-year-old Lectromelt* Furnace still works full time at Empire Steel Castings, Inc., Reading, Pa. Empire says, "It's as good as the day it started. Better, in fact, because we found we could pour additional power to it, so we get heats out faster than we first dared to."

On the basis of the performance and reliability of Empire's old furnace, they recently bought a new 5-ton, top-charging Lectromelt. Now they get much closer temperature and chemical control. And new, pin-point analysis control enables them to duplicate uniformity and high grade of molten metal in lot after lot of stainless.

Lectromelt Furnaces will boost your performance record and add to the quality of your metal. Write for catalog #9 describing them in detail. Pittsburgh Lectromelt Furnace Corporation, 323 32nd Street, Pittsburgh, Pennsylvania.

Manufactured in . . . CANADA: Lectromelt Furnaces of Canada, Ltd., Toronto 2 . . . ENGLAND: Birlec, Ltd., Birmingham . . . FRANCE: Stein et Roubaix, Paris . . . BELGIUM: S. A. Belge Stein et Roubaix, Bressoux-Liege . . . SPAIN: General Electrica Espanola, Bilbao . . . ITALY: Forni Stein, Genoa. JAPAN: Daido Steel Co., Ltd., Nagoya

*REG. T. M. U. S. PAT. OFF.

MOORE RAPID

WHEN YOU MELT... *Lectromelt*

every study shows a handling saving

80 TONS OF SUGAR PER DAY

SAVES $30 ON EVERY CAR UNLOADED

RETURNS 84% OF ITS COST

Many companies are checking their handling problems against the American MonoRail Case Study File of "Engineered Applications." The file contains a series of case studies taken from many successful American MonoRail installations. One company saved $30.00 on every car unloaded. Another doubled metal finish production. A glass plant moved 22 tons of glass batch per hour. Another installation returned 84% of its cost in one year. These are just a few of the many studies covered.

If you want to lower your handling costs, speed up production and cut maintenance overhead, let us send you this file. Just drop us a line on your business letterhead, asking for "Engineered Applications File F-1."

AMERICAN OVERHEAD HANDLING EQUIPMENT

AMERICAN MONORAIL COMPANY

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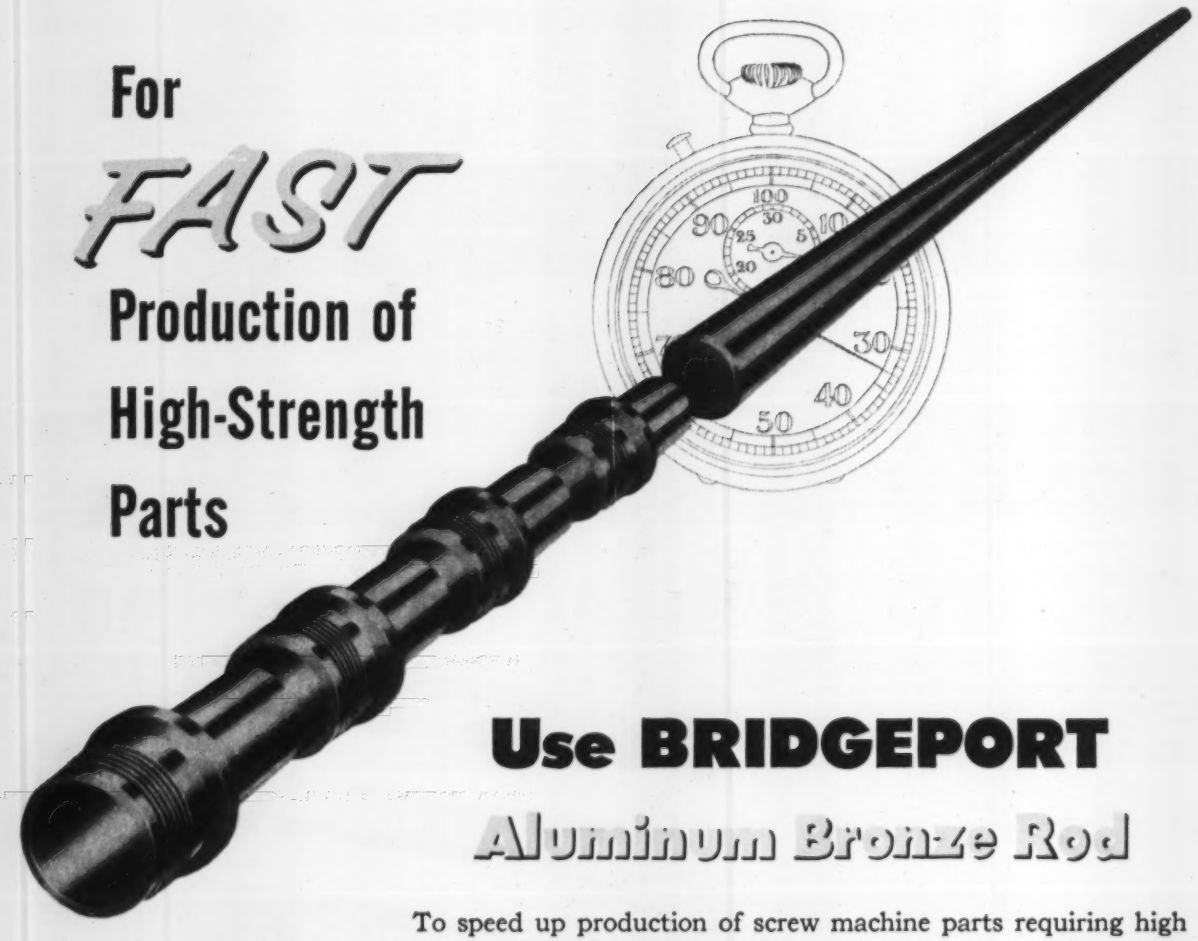
For *FAST* Production of High-Strength Parts



Use BRIDGEPORT Aluminum Bronze Rod

- machines 50 to 75% as fast as Free-cutting Brass.
- has 85,000 psi tensile strength.
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- is 50% stronger—9% lighter than Naval Brass.

To speed up production of screw machine parts requiring high strength and outstanding durability, use Bridgeport Aluminum Bronze, Alloy 707. It gives superior service in wire and cable connectors, bolts, nuts, gears, pump parts and many other applications where dependability is a vital requirement.

Bridgeport Aluminum Bronze is one of a wide variety of Bridgeport Alloys that meets almost every screw machine requirement. Your nearest Bridgeport Sales Office can give you complete information on any Bridgeport Alloy and also offer you the advantages of our Technical Service to help you solve methods and metals problems.

Write for your copy of Bridgeport's Manual on Aluminum Bronze and other high-strength alloys.

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In Canada: Noranda Copper and Brass Limited, Montreal

included.
Ordnance Storage Contract Awarded
A contract to move, clean and store more than 3,000 machine tools from Michigan, Indiana and Ohio factories to Fort Custer has been signed with Commercial Contracting Corp., Detroit, Col. Edward D. Mohlere, Detroit Ordnance District commanding officer, announced today.
Work will begin immediately, he said. Storage will be in 96 buildings scattered throughout the fort.
Mohlere said the program will save taxpayers "millions of dollars in capital equipment that might otherwise have to be replaced," and also "will cut in half the time necessary previously to go into full-scale production."

— From Detroit News, May 22

Hand CCC your "Mothball Headaches!"

We have processed more than a HALF-MILLION machine tools and industrial equipment for the U. S. Government and prime contractors since 1945.

Removing, processing, transporting and storing millions of dollars' worth of production machinery is no job for amateurs. It calls for highly specialized equipment and skills, plus constant supervision by a firm of financially responsible experts. Otherwise it can be a king-sized headache!

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If you're dreading the headache of "mothballing"—or *any* plant program involving the removal, movement or installation of machinery – let CCC do the worrying. *That's our specialty.* No matter how large or small the job, you can be confident we'll do it *quickly, expertly, economically* – just as we've served:

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COMMERCIAL CONTRACTING CORPORATION • ***General Contractors***

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Are Weld Rejections Cutting Your Profits?

Here's How You Can Reduce Rejection Rates in Your Inert Gas Shielded Arc Welding Operations

Every time a welded assembly is rejected because of weld contamination, an unnecessary bite is taken out of your profits. You can reduce these rejection losses to a minimum by specifying 99.99% pure LINDE argon. High purity argon is your insurance that your welds will be free from contamination and porosity—resulting in fewer rejects and higher profits.

But there's more to the LINDE story. You can be sure of your gas supply when you order LINDE argon. LINDE's many strategically located plants and distribution facilities can be counted upon to provide all the high purity argon you need even when unexpected production peaks exceed normal demands. In addition, you can call upon LINDE's Engineering Service to help you solve tough production problems when time means money.

Call your nearest LINDE office today for more information about how LINDE argon—plus LINDE Engineering Service can mean increased production and greater profits for you.

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A Division of Union Carbide and Carbon Corporation
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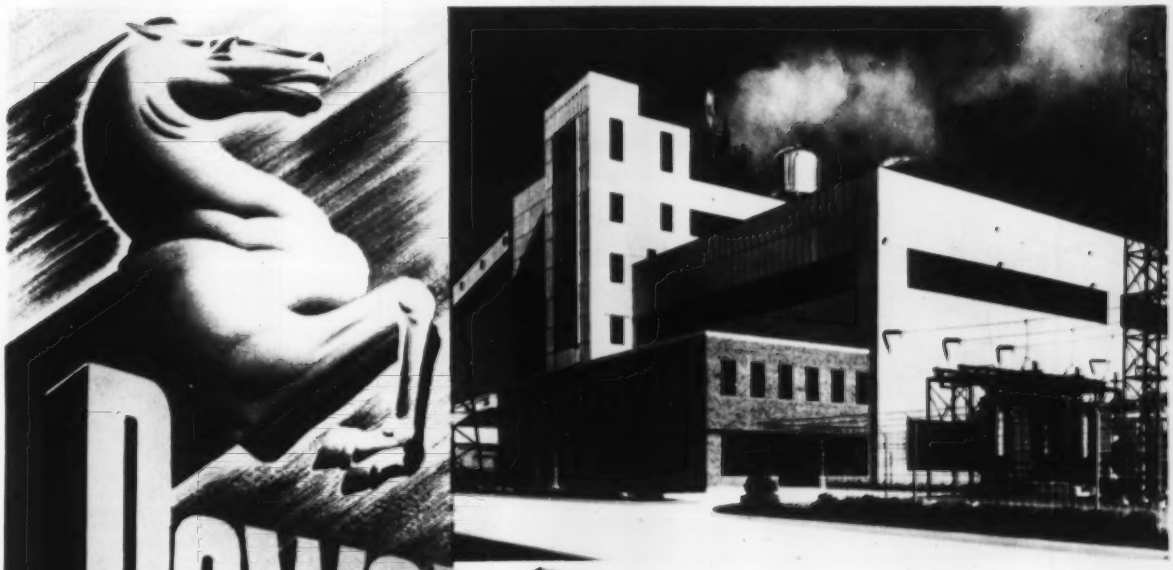
Division of Union Carbide Canada Limited, Toronto

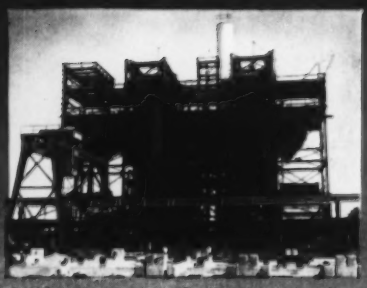
Linde Trade-Mark

The term "Linde" is a registered trade-mark of Union Carbide and Carbon Corporation.

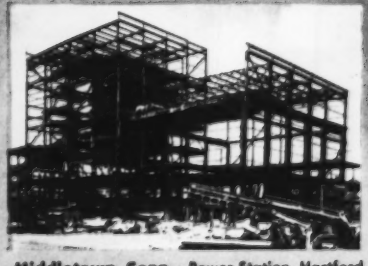


Newnan, Ga.
Plant Yates,
Georgia Power Company

Power to spare



Lumberton, N. C.—Power Plant, Carolina Power & Light Company



Middletown, Conn.—Power Station, Hartford Electric Light Company

FABRICATED STEEL FOR

Power Plants • Hangars • Grandstands
Bridges • Office Buildings • Churches
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Hospitals • Schools • Industrial Buildings
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Power and more power is in demand as American industry expands its facilities, aims at new production records. More than 30,000 tons of steel is now actively on order from Ingalls to be used in the construction of power plants similar to these illustrated here.

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Numerous commercial and industrial buildings, constructed during the past 40-odd years and located in almost every section of the country, are proof that Ingalls can meet any fabricated steel requirement, regardless of size or location. Plants at Verona (Pittsburgh district), Pa., Birmingham, North Birmingham, Pascagoula, Miss., and Decatur, Ala., assure *you* of a service that's prompt, efficient and economical.

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Fisherman's Wharf FPG Photo

BULLARD

The Invisible Background of Industrial Progress

Modern fishing fleets are no longer dependent on the winds for motive power — they are propelled by gasoline or Diesel engines traveling far and wide with the ever-changing schools of fish enabling the modern fisherman to make larger "catches" in shorter periods of time. Many of the boats have mechanical handling for the unwieldy fishing gear, and have refrigeration units to keep their "catch" fresh for market delivery.

Furthermore, canneries and processing plants employ modern methods with mechanical handling and packing equipment to bring the packaged product to your table ocean fresh.

All of this equipment, from the boats in the fishing fleet to that in the cannery, is made possible by *Modern Machine Tools* — "The Invisible Background of Industrial Progress."

THE BULLARD COMPANY • BRIDGEPORT 2, CONNECTICUT

Bullard Vertical Chucking Grinder

Available in six sizes 30″ through 74″

Designed and built to maintain exceptional dimensional accuracy and produce uniform, infinitely smooth surface finishes on the larger sizes of work, the Bullard Vertical Chucking Grinder offers you these advantages: —

Accuracy — Production grinding on large diameters to two and a half tenths of a thousandth (.00025), as determined with an electronic measuring instrument.

Versatility — Grinding and turning operations on the same machine — A selection of cutting heads in combination with grinding heads can be made when ordering.

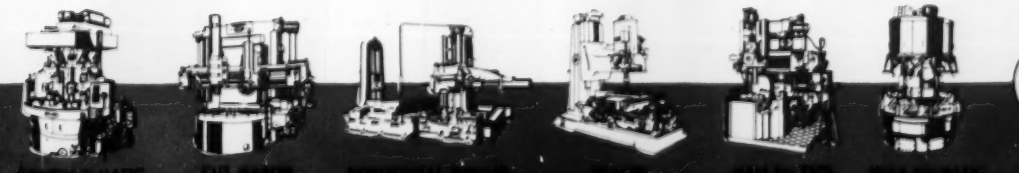
Variable speeds obtained from either of the dual control desks give required table speeds up to machine maximum.

Both heads may be swiveled to meet angular requirements.

Maximum safety for the operator is provided by means of electrical interlocks so that the machine cannot be started while loading or making adjustments.

Vertical construction provides ease of loading — "It's easier to lay heavy work down than to hang it up."

Call your Bullard Representative who will be glad to give you complete details or write to The Bullard Company, Bridgeport 2, Connecticut — phone EDison 6-2511.

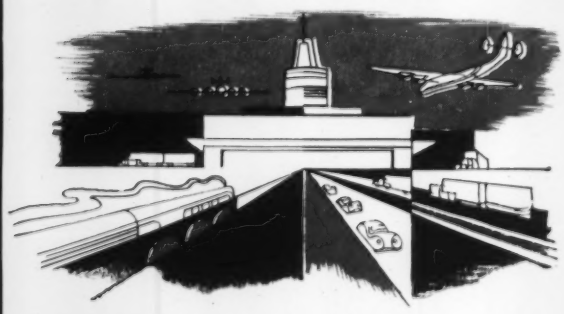


BULLARD

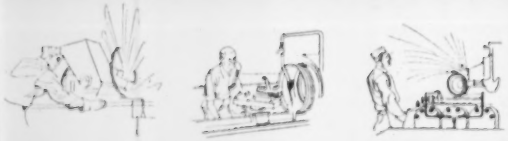
WE HAVE LEARNED A LOT ABOUT TITANIUM SINCE 1949

in 1949 American Welding started experimental work on Titanium and in 1950 accomplished the first successful production flash butt-welding of Titanium.

today The use of the "wonder metal" is largely restricted to aircraft use. American Welding annually produces thousands of Titanium rings for jet engines.



tomorrow Who knows — Titanium may be used as widely as aluminum—perhaps even in your product. One thing is sure—welding will continue to be a practical and inexpensive method of fabricating.



WELDING • MACHINING • FABRICATING

AMERICAN WELDING

STEEL

August 2, 1954

Metalworking Outlook

Slower Going

United Steelworkers' "Operation Follow-up" is proceeding more slowly this year than usual. It's customary for most of the union's 1500 individual contracts to be negotiated fairly promptly after the relatively few basic steel agreements have been signed. The nonbasic contracts usually follow the basic pattern closely. The complexity of the insurance and pension adjustments in the basic steel contract this year causes the delay. But no strikes are expected, and the bulk of the fabricators' agreements will probably be signed by Aug. 15.

The CIO Holds Out

There's little likelihood of any major strike in the electrical manufacturing industry—even though the CIO's electrical union last week was still holding out against General Electric Co. and Westinghouse Electric Corp. That group has a continuing contract with both which doesn't expire until it gives notice. The independent United Electrical Workers has come to terms with both, settling for an average 5-cent wage boost, plus fringes.

New Labor Problem

A new labor problem is bobbing up to plague the economy. What happens to pension funds when a plant is disbanded, merged or moved? Kaiser Motors Corp., 12,000 of its former employees at Willow Run and the United Auto Workers-CIO seek an answer. The courts will probably eventually decide whether the workers get a share in the split now or wait for years when they would normally retire to get a small pension. At least two other Detroit pension funds will be in a similar situation. When American Motors Corp. shifts its Hudson Division to Wisconsin and Murray Corp. closes down an auto body plant, relatively few of the personnel participating in pension plans will stay on with the same employer.

Mills Plan Troubles

Accelerated income tax payments required under the Mills plan have an adverse effect upon more than one-third of the 198 manufacturers surveyed by National Industrial Conference Board. Some 65 respondents were forced to borrow money, defer normal outlays, reduce inventories or take other unusual steps to meet the Mar. 15, 1954, installment. Many of the 65 have seasonal production or high working capital requirements in relation to their fixed capital investment.

More Defense Spending Ahead

There will be more defense spending for Asia. But it won't show up in the budget for another 12 months because the budget is set. However, there will be shifts in the existing funds so that more will go to the Orient. Washington observers believe the Reds will start another aggression eventually in southeast Asia that will necessitate more defense spending. When? Nobody knows this side of the Iron Curtain. Look for continu-

The Technical Outlook—p. 83 The Market Outlook—p. 115

ing high spending indefinitely, with more emphasis on automatic weapons, radar, etc. which are nearly ready for mass production. A House-passed bill allows $3.6 billion for military aid abroad in fiscal 1955.

Air Force Shift in Spending

Small firms are to get more work from the Air Force. That armed service hopes to achieve its objective by having its prime contractors subcontract more of their jobs. At a Los Angeles meeting, many of the Air Force's 400 major primes were briefed on the new policy. Similar meetings will be held elsewhere.

Alcoa Dickers for Power

Aluminum Co. of America is negotiating with Canadian officials in British Columbia for power rights for a possible aluminum smelter in Alaska. Frobisher Ltd. has applied for water rights license to the British Columbia section of the Yukon river watershed and plans expenditures of perhaps $700 million for power projects and metallurgical refining installations. A deal between Alcoa and Frobisher for power is highly possible if government objections can be overcome.

How Much Color TV?

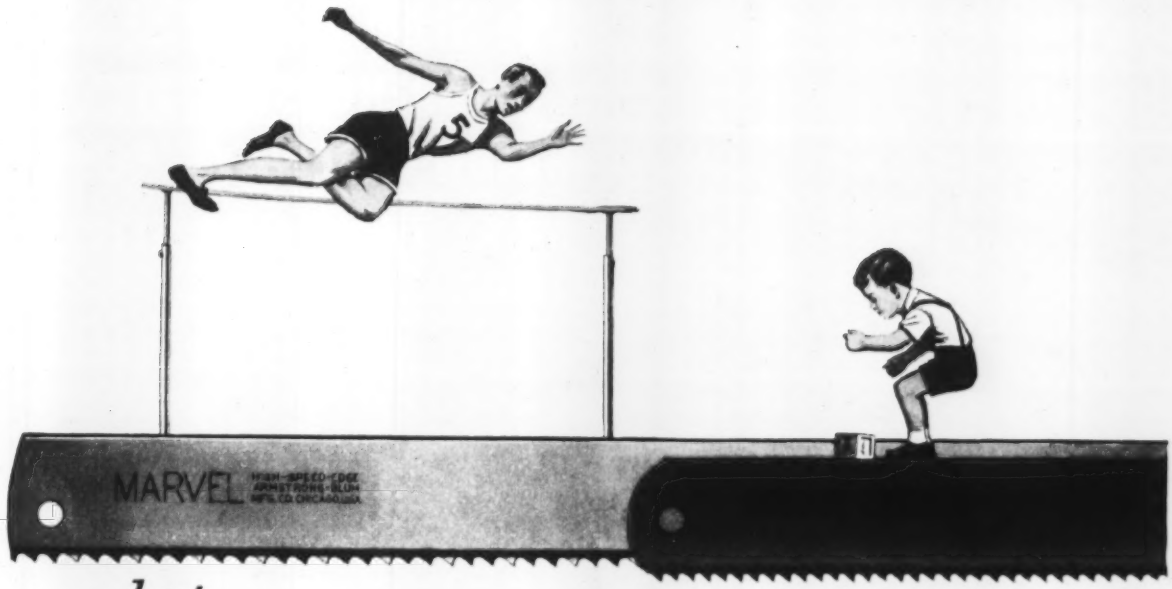
Americans will own an estimated 7.5 million color television sets in 1957. So predicts John T. Thompson, manager of distributor sales for General Electric Co.'s Tube Department. He believes that by 1957 the commercially successful color set will have a screen in the 21-inch range and will sell for much less than $1000. By 1964, he says, consumers will pay $4.5 billion yearly for parts and service for home radios, monochrome and color TV sets.

Straws in the Wind

Relaxations of import and exchange controls by a growing number of other trading nations may increase U.S. exports by as much as $700 million in 1954, predicts National Foreign Trade Council . . . A method of "canning" and selling aluminum alloy nails in packages color-coded to show their application and size has been adopted by Nichols Wire & Aluminum Co., Davenport, Iowa . . . Effective Jan. 1, 1954, Jones & Laughlin Steel Corp. has changed its depreciation methods on assets covered by certificates of necessity to amortize them on the declining balance method at twice the company's regular rates of depreciation, in lieu of the five-year amortization formerly provided.

This Week in Metalworking

Consumption of steel, copper and aluminum will hold fairly steady for the next three months (p. 47) . . . Steel warehousemen see a mild upturn ahead (p. 48) . . . More metalworking mergers are coming (p. 49) . . . First-half earnings for steel and other metalworking companies are surprisingly good (pp. 50, 51) . . . The Sciaky brothers from France: 20th Century LaFayettes (p. 57) . . . Brazilian steel production is expanding (p. 58) . . . Metal abrasives bombard industry (p. 59).



. . . *but*

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Insist upon *genuine* MARVEL High-Speed-Edge when buying hack saw blades—and be SAFE, for you can depend upon MARVEL. They have been "tested", "pre-tested", and "re-tested" by thousands of users for more than a quarter-century!

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Dangerous Obstructionists

All of us who are identified with American industry should be deeply concerned over certain sinister aspects of the debate in Congress over three separate issues in recent weeks. These issues are double taxation on dividends, public versus private power in TVA territory and whether atomic power shall be a government monopoly or an activity shared by government with industry.

On all three issues, members of Congress are not aligned according to party lines. In most instances senators and representatives are divided according to their attitudes toward the private enterprise system. Senator Morse, a few Republicans and a larger number of Democrats who seldom have anything good to say about private enterprise or the capitalistic system want the federal government to have a monopoly in virtually everything.

When anyone suggests, as President Eisenhower has done, that the government get out of some activities that encroach upon the prerogatives of private enterprise, these demagogues cry to high heaven that the administration is guilty of attempting to "give away" to predatory interests something that belongs to the people. They apply this "give away" argument to the TVA and atomic energy issues. They oversimplify and distort the problem of taxing dividends by stating that any move to correct double taxation will favor the "rich" and harm the "poor."

Although Wayne Morse, Albert Gore, Lister Hill, Matthew Neely, Herbert Lehman, Warren Magnuson and others may honestly believe that they are liberals and that they are sincerely devoted to protecting the interests of the people, in actual fact they are destructive reactionaries. Their avowed efforts to build up the power and scope of federal government authority and to throttle if not destroy private enterprise—if not challenged and defeated promptly and decisively—can lead only to totalitarianism in the United States. This would be a tragic disservice to the people for whom these socialistically minded senators are so demagogically solicitous.

At the last national election in 1952 the American people voted overwhelmingly in favor of a candidate who promised to trim the federal government down to sensible size. Shall a few misguided fanatics be permitted to thwart this commendable objective?

E. C. Shaner

EDITOR-IN-CHIEF

PLASTICS IN DIE WORK: Plastic dies undoubtedly will play an important role in American industry, but up to date the exact specifications of this role have not been defined. This year more than five million pounds of phenolics, polyesters and epoxies—the three die materials—will be sold, but only a very small percentage of this poundage will find its

way into commercial tool and die and stamping shops.

Perhaps the truth is that at this stage in the development of plastic dies (p. 84), the captive die shops of the auto and aircraft industries are the only establishments that have the resources to carry on extensive and expensive pioneering in this field. However, the missionary work of these captive shops has demonstrated that there are definite opportunities for plastic dies.

They provide a material that is easy to work for the purpose of getting quick engineering information for metal dies. They afford a fast, inexpensive toolup for prototypes. They are ideal for short runs. They merit investigation.

* * *

MERGERS HERE AGAIN: Last week talk in metalworking circles on the rumor that representatives of Bethlehem Steel and Youngstown Sheet & Tube were discussing plans for consolidation (p. 49) quickly turned to questions as to why there have been so many mergers during the past year or two.

There was a flurry of acquisitions by large corporations of manufacturers of heavy earthmoving equipment. There were the Willys-Kaiser, Studebaker-Packard and Nash-Hudson consolidations in motordom. Several steel producers have been acquiring smaller specialty manufacturers, as for instance Republic Steel's purchase of Owings-Sharpe Inc., producer of plastic pipe, and of a dozen or so local chain manufacturers. Among the manufacturers of engineering equipment there has been a moderate wave of mergers and acquisitions.

Do these scores of consolidations, mergers or acquisitions conform to any common pattern? No. They are prompted by a wide diversity of factors.

* * *

TAX IS MAJOR FACTOR: Heavy taxes constitute a frequent cause for consolidations. It was the dominant influence in the get-together of Willys-Overland and Kaiser-Frazer. The loss-carry-forward provisions of the excess profits tax shouted to high heaven that this deal be consummated.

In smaller acquisitions, usually attended by scant publicity, the major factor is the desire of a family to get its estate in order so that the inheritance taxes are not prohibitive. Many corporations largely owned by a few individuals or by one or several families have sold out for the sole purpose of achieving enough flexibility in their finances to present to probate court at the death of a principal an estate that is not decimated to practically nothing by vicious inheritance taxes.

In such cases demagogues usually say that the big company gobbled up the poor, defenseless little company. Sometimes the truth is that the family-owned little company was fortunate to get out from under a terrific tax burden.

* * *

PLUSES ARE POSITIVE: Of course all of us realize that the tax angle, while important, is a negative factor in mergers. More important in almost every respect are the positive gains to be derived from mergers, consolidations or acquisitions. Fortunately many of these are tangible, in that they show up on the earnings reports and balance sheets not too long after the wedding has been formalized.

The advantage of combining operations may be in greater manufacturing efficiency, improved sales and distribution, increased security through diversification of product, more effective research and scores of other improvements and refinements. Pertinent questions at this stage are these: Does mergeritis affect employment dangerously? Is the epidemic of mergers a threat to our economic future? The answers are "no."

* * *

MORE NEW COMPANIES: One reason why many persons are not alarmed when a new outbreak of mergers or acquisitions occurs is that the total number of companies in industry never seems to be reduced. This means, of course, that the number of newly established companies exceeds the number of companies that are absorbed into other companies, except in periods of acute depression.

There are several plausible explanations for this. One is that a company merged into a larger one seldom is able to continue to render specialized or distinctive service to customers to the extent it did before it was merged. As a result, one or more new companies enter the field to cater to these needs for specialized service.

As long as these recurring epidemics of mergers and acquisitions do not close the door of opportunity to aspiring new companies, there will be little to fear from them.

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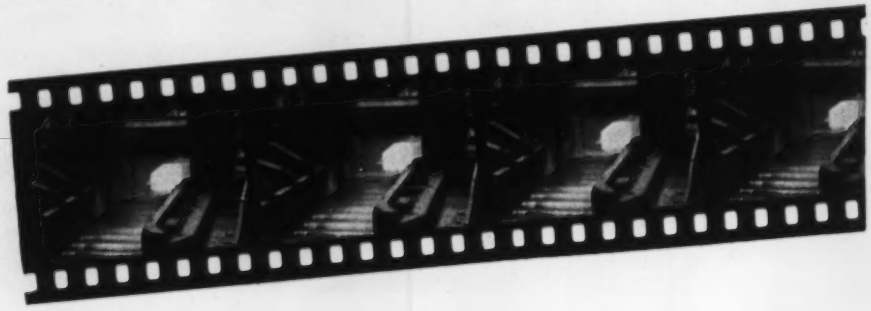

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STEEL'S QUARTERLY SURVEY

Steel, Copper, Aluminum

CONSUMERS TELL WHAT'S HAPPENED IN THE PAST THREE MONTHS

	BETTER	SAME	WORSE
INVENTORIES	H.R. carbon bars, over 1 inch H.R. carbon bars, under 1 inch H.R. alloy bars C.F. bars, over 1 inch C.F. bars, under 1 inch C.R. sheets, strip Plates, light Plates, heavy Structural shapes Welded tubing Seamless tubing	H.R. sheets, strip Galvanized sheets Stainless sheets, strip Copper, brass mill products Aluminum products	Pig iron (foundry)
DELIVERIES	H.R. carbon bars, over 1 inch H.R. carbon bars, under 1 inch C.F. bars, over 1 inch C.F. bars, under 1 inch H.R. sheets, strip Plates, light Plates, heavy Structural shapes Seamless tubing Pig iron (foundry)	H.R. alloy bars C.R. sheets, strip Galvanized sheets Welded tubing Stainless sheets, strip Copper, brass mill products Aluminum products	

Plateau for Metal Buying

For the next three months, consumers will hold fairly steady in use of steel, copper and aluminum. Look for a mild upturn in late September or early October

BUYING of steel, copper and aluminum will hold steady through the next three months.

There will be definite pickups on some items, but slowdowns on others will cancel out gains. STEEL's latest survey shows that inventories of most items (see table above) are approaching what users consider ideal levels.

Improvement—Delivery is getting better. This is the sixth straight quarter in which the survey indicated improvement. Ten items in the present survey were better than in second quarter; remaining seven stayed the same—good.

Automotive buying should boost sales later in the quarter, but the upturn will be offset by a slow start. Fourth quarter should be a good one, though. Railroad buying will be off for several reasons. Material for most extensive summer repair jobs already has been procured; lower production of diesel locomotives and freight cars will also drag down the industry's buying. An official of one car builder says his company buys only enough steel to fill a particular contract. Right now, it has no contract.

An Aid—Construction will be one of the steadying influences. Many of the projects which helped the industry set contract award records in past months will be getting under way.

A clue to another source of buying is given in a comment that "inventory may be larger because of new and additional products involving different materials."

Bullish—Many respondents were optimistic. Representative of the trend for the quarter: "We expect our raw inventory to increase and our finished inventory to decrease three months from now."

There were still a few who reported having "more inventory than business justifies."

Sore Spots—But there were few reports of serious imbalances. There was some trouble noted in standard structural shapes and heavy plates. And a few users reported imbalances of hot-rolled carbon bars, galvanized sheets, light plates, welded tubing, seamless tubing, copper and brass mill products and aluminum products.

There were stock reductions in

galvanized sheets and foundry grade pig iron. Other items stayed about the same as a quarter ago or increased slightly.

Incidentally, foundry pig was the only item making a poorer showing than in last quarter, and the reason is the low level of inventory. Even so, users don't consider the imbalance serious.

All items are available on less than 10 days delivery, but most of such deliveries are from warehouses. Few respondents reported delivery times of more than 60 days on any item. Last quarter there were still a considerable number reporting delivery of 60 to 90 days.

One respondent noted, "The last month we have been getting steel on about a week's notice."

Welded tubing and stainless sheets and strip were a little harder to get in under 10 days but easy to obtain in under 30 days.

Fewer users changed sources of supply during the past quarter. Many of the shifts that did occur were undoubtedly from warehouse to direct mill buying.

After last month's price adjustments, quotations are holding firm in anticipation of the fall pickup.

Machine Tool Orders Up

New orders for machine tools during June have halted the steady decline felt in new business since last October, the National Tool Builders' Association announces.

Although still substantially below the high level of a year ago, the $55 million worth of new orders during June represents a 34-per-cent increase over the post-Korean low of $41 million recorded during May.

Shipments rose a trifle during June, but continued about 10 per cent below the rate of the first four months. Tools being delivered ran about $85 million, $30 milion more than new orders, and as a result, backlog for the industry continued to drop.

Because of the wide-spread vacation shutdowns this year, both incoming orders and shipments during July may drop to their lowest point since World War II, the association declares. But good business, better than in June, is expected from August on.

Warehousemen See Better Business Soon

Pickup in distributors' business may be slow until around Labor Day. Keen competition among sellers is exerting pressure on higher price schedules

STEEL PRODUCERS can expect increased buying by the warehouses soon, Walter S. Doxsey, president, American Steel Warehouse Association Inc., says. That's because warehouses are working on actual needs of large and small steel consumers, most of whom have reduced their stocks of raw materials to realistic levels, he believes.

Speaking at an industry press conference in New York, Mr. Doxsey and other members of the association's executive committee pointed out that the early months of 1953 were the best in the history of the industry. But beginning last summer, business started to slide. Association monthly reports show that the trend was reversed in May and June when shipments showed an upturn. Shipments from mills to warehouses also showed increases during March, April and May.

Caught in the Middle — Warehousemen are worried about the cost picture because of the current round of wage increases. Basic steel costs about $3 a ton more, and another $1.50 is piled on top of that at the warehouse level because of increased wages and other indirect costs. "Thus, with increased costs of steel and higher costs of warehouse labor, the warehouses are endeavoring to hold prices to their customers so as not to exceed the net increase in costs involved," says C. L. Hardy, president, Joseph T. Ryerson & Son Inc., Chicago.

Profits last year amounted to a little more than 3 per cent but will be definitely lower this year, partly because turnover is slower.

Getting Thinner — Mr. Hardy said that information available from leading warehouses indicates that profits on sales and capital invested were below those of steel producers in 1953. He added that "with physical volume of current business well below similar periods in 1953, warehouse distributors are faced with profit returns even lower than in 1953 and dangerously close to no returns at all."

Warehouse business so far this year is off about 35 per cent from last year, according to some estimates. However, that has not been generally true in all districts. For instance, in New England, business has been off about 20 to 25 per cent, with construction mate-

rials moving fairly well, carbon bars and hot-rolled alloys relatively quiet and cold-finished steels "hardly moving at all." And on the West Coast, it appears, warehouse business has been running ahead of other sections.

Less Foreign Problems—A New York district distributor of domestic steels reported less competition from abroad than six months ago, when foreign prices were $6 to $20 under the going market. Imported steel prices have since firmed up some, as more demand has developed in the countries that have been exporting to the United States and as business has quickened in certain other sections of the world market. He estimated import business is off about 25 per cent from a year ago.

Steel producers are considerably more interested in booking small miscellaneous orders than they were a year ago. "This is one of the important factors in today's reduced volume of warehouse business," said L. B. Worthington, president of U. S. Steel Supply Division of U. S. Steel Corp.

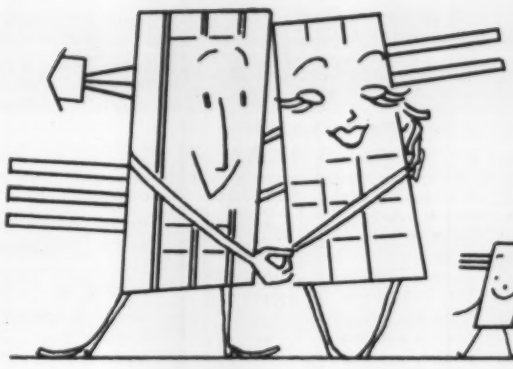
Mines Bureau Changes O.K.'d

Secretary of the Interior Douglas McKay has approved a Bureau of Mines reorganization plan which decentralizes conduct and management of research programs to four regions while leaving responsibility for policy and program determination with Washington.

The bureau's four regions will headquarter at Reno, Nev.; Denver; Tulsa or Bartlesville, Okla.; and Pittsburgh, Bruceton, Pa., or Morgantown, W. Va.

Other features of the plan call for the bureau to cease producing titanium and zirconium in commercial quantities as soon as private industry can meet requirements as to tonnage and quality and to stop experimental work on oil shale and oil from shale at Rifle, Colo., unless there is a substantial contribution from interested companies.

The plan also affects the bureau's helium producing facilities, its research work on synthetic gaseous and liquid fuels from coal and lignite. Statistical and commodity analysis work will be strengthened and publication of the *Minerals Yearbook* speeded up.



More Mergers Coming

LOOKING FOR A WAY to strengthen your economic foothold in the current readjustment?

Mergers and consolidations are providing tactical moves for many companies as the switch to civilian production reshapes the nation's competitive conditions. Mergers since World War II, both completed and those now rumored, point up possible advantages to be gained in consolidation.

The Big One—Spotlighting this trend last week was the interest in the rumored Bethlehem Steel Corp. consolidation discussions with Youngstown Sheet & Tube Co. Bethlehem with its rated capacity of 18.5 million tons of ingots and steel for castings has plants in the East and on the West Coast, but none in the Midwest. Youngstown Sheet & Tube with its Ohio and Chicago plants in the Bethlehem family would give the company nationwide marketing facilities.

Rounding out product lines and entering new fields with a minimum of risk are also possible merger advantages. Republic Steel Corp.'s acquisition of plastic pipe producer Owings-Sharpe Inc. and more recently the Cleveland Chain & Mfg. Co. are examples.

Pressure in Autos—The independent automaker mergers were fostered to a great extent on production and procurement advantages as well as those of distribution. In the pending Studebaker-Packard consolidation, officials report that the new firm will be strengthened because the production and distribution facilities of the two complement each other to a considerable degree (see STEEL, July 19, p. 53).

Tax considerations, too, figure prominently in mergers. Loss-carry-forward provisions of excess profits tax contributed to the merger of Willys-Overland Motors Inc. and Kaiser Mfg. Corp. last year. Current proposals in the new tax bill concerning carry-forward provisions, if passed, may provide substantial merger advantages.

New Entries — Other consolidations in the negotiating stage are those of White Motor Co. with Mack Trucks Inc., and Follansbee Steel Corp. with an undisclosed company.

White, which recently acquired Sterling Motor Truck Co. Inc. and most of the assets of Autocar Co., now makes a complete line of trucks and parts. The acquisition of Mack would add rail and road busses and fire apparatus to its operations.

Offer Made—M. A. Follansbee last week said that "substantial financial interests" had offered to purchase his company. Follansbee produces cold-rolled sheet and strip, metal roofing, stove and furnace pipe, stampings, dairyware, enameled ware and aluminum ware.

Figuring in the merger rumor mill too last week was Climax Molybdenum. No other company names were mentioned in the deal, however.

Even the political climate for mergers is improving. The Eisenhower administration appears to be wearing down the fear of the past 20 years that bigness per se is an evil. Mergers offer advantages that can strengthen industry and the economy. More will come before too long.

Metalworking's First Half Profits Still High

	Profits, 1st half 1954	1953		Profits, 1st half 1954	1953
Thompson Products Inc.	$6,490,502	$5,357,618	Underwood Corp.	427,901	896,762
Signode Steel Strapping Co.	997,689	947,836	General Bronze Corp.	549,680	515,538
Twin Coach Co.	726,958	296,300	Mullins Mfg. Corp.	1,250,005	1,714,280
Eaton Mfg. Co.	5,206,031	5,498,022	Central Foundry Co.	325,000	277,849
General Electric Co.	93,856,000	75,417,000	Douglas Aircraft Co. Inc.	19,178,939	10,042,975
Minneapolis-Honeywell Regulator Co.	7,019,778	4,901,651	Lamson & Sessions Co.	713,314	849,553
American Metal Products Co.	1,530,600	1,385,000	Midland Steel Products Co.	910,640	1,768,513
Caterpillar Tractor Co.	12,627,907	11,607,636	National Lead Co.	17,569,659	13,807,715
Elliott Co.	1,001,590	1,343,943	Rheem Mfg. Co.	3,259,819	2,775,632
Hoffman Radio Corp.	818,683	697,320	Standard Forgings Corp.	172,860	449,771
Monarch Machine Tool Co.	994,300	944,978	Union Carbide & Carbon Corp.	41,803,203	52,478,580
Pittsburgh Screw & Bolt Corp.	461,163	719,144	Youngstown Steel Door Co.	400,104	648,278
Republic Aviation Corp.	4,590,544	3,739,300	General Refractories Co.	1,090,926	2,158,011
Continental Can Co. Inc.	9,131,932	6,911,364	Budd Co.	3,251,811	5,530,214
Gillette Co.	12,940,556	9,259,483	General Steel Castings Corp.	1,074,190	1,677,042
New York Air Brake Co.	968,677	1,091,389	Campbell, Wyant & Cannon Foundry Co.	274,636	721,207
Allis-Chalmers Mfg. Co.	13,490,505	10,453,368	Remington Rand Inc.	7,048,132	5,858,546
Baldwin-Lima-Hamilton Corp.	2,090,851	3,896,997	American Radiator & Standard Sanitary Corp.	7,221,254	6,412,373
National Acme Co.	1,857,771	1,625,351	Electric Auto-Lite Co.	776,098	5,719,745
National Cash Register Co.	5,627,064	5,570,465	Hastings Mfg. Co.	249,832	122,625
Revere Copper & Brass Inc.	4,924,790	4,982,470	Koppers Co. Inc.	3,295,994	4,572,341
Sylvania Electric Products Inc.	3,522,785	5,168,092	Glenn L. Martin Co.	6,842,002	4,503,165
U. S. Pipe & Foundry Co.	4,352,739	3,729,321	United-Carr Fastener Corp.	1,068,754	1,276,490
Worthington Corp.	3,543,285	3,098,499	Bridgeport Brass Co.	2,725,950	2,874,774
Container Corp. of America	8,107,000	4,914,000	Climax Molybdenum Co.	6,977,218	3,913,545

METALWORKING'S PROFITS for first half, 1954, are good. The year as a whole should compare very favorably with 1953.

That's the picture indicated in the early company reports of earnings. A definite upturn in the second quarter of this year was noted, and for many 1954 may be a bigger profits year than 1953.

The Factors—Why this bright picture when sales are down for most companies? Two factors stand out: The absence of the excess profits tax and more efficient operations. Reduced production schedules have cut out overtime and other high-cost factors which are part of capacity operations. Then too, management is tightening up all around in purchasing, manufacturing and selling operations.

In the accompanying table of 50 metalworking firms, 29 show a definite increase in earnings the first half of this year over last year. As in this year's first quarter (see STEEL, May 10, p. 74), the aircraft industry continues its high-flying pace.

An Observation — One possible soft spot noted by many observers is that the smaller companies may not fare quite as well as the larger ones. One reason is that many were not affected by excess profits tax. Another is that many are not so diversified as the larger companies.

FTC Adds to Scrap Complaint

Bethlehem Steel Corp., National Steel Corp. and Hugo Neu Corp. have been added to the Federal Trade Commission's complaint about monopolistic practices in the scrap industry. The original complaint named Luria Brothers & Co. Inc., Southwest Steel Corp., which Luria owns and controls, and 16 steel and iron producers (STEEL, Feb. 1, p. 46). Luria has denied the charges (STEEL, Feb. 8, p.77).

Since the filing of the complaint on Jan. 19, FTC has dropped charges against Boiardi Steel Corp. and National Erie Corp. because they have been dissolved since then. However, commission lawyers said they had obtained enough additional evidence to add the three new companies. Both operating subsidiaries of Bethlehem are included.

Hugo Neu Corp. is charged with conspiring with unnamed Japanese steel mills to restrain and suppress interstate and foreign commerce in the sale and purchase of scrap. This represents a broadening of the original complaint.

Fast Tax Write-Offs Granted

Railroads led in the latest compilation of certificates of necessity for accelerated tax amortization issued by the Office of Defense Mobilization.

Union Pacific, Northern Pacific, Western Maryland, Central of New Jersey and Central of Georgia were certified for new or expanded facilities amounting to $33,063,320, with percentages allowed for tax write-offs from 50 to 85 per cent.

Aerojet General Corp., Sacramento, maker of aircraft parts,

was allowed 50 per cent on $3,101,-264; Tennessee Eastman Co., Kingsport, Tenn., a division of Eastman Kodak Co., was allowed 45 per cent on $2 million for research and development facilities; and Bethlehem - Sparrows Point Shipyard, Sparrows Point, Md., was granted 50 per cent on $1,115,000 for ship construction facilities.

Container Demand Improving

Manufacturers' confidence in the container outlook for the rest of the year has been renewed with a slight upturn in container operations at the start of the second quarter, says the Summer 1954 edition of "Containers and Packaging," issued by the Department of Commerce.

The decline in container demand, which carried over in the early part of the first quarter from the general decline in 1953, has about stopped, the report states.

Metal can shipments were 1.8 per cent above the first-quarter, 1953, volume. Increased demands for wood-metal milk bottle crates resulted in the first-quarter production exceeding by about 10 per cent the comparable period of 1953; steel packages, kegs and pails shipments increased 8.2 per cent; but shipments of steel barrels and drums were 2.8 per cent below the first quarter of 1953, and steel strapping operations decreased less than 5 per cent.

House Acts To Aid Business

H.R. 9835, designated to get the government out of competition with private business as far as possible, has been passed by the House and awaits Senate action.

Under the bill, the secretary of commerce would receive complaints of government competition and make recommendations to the President. The director of the budget would make recommendations to the President whenever any government department or agency seeks to establish a new commercial-type activity.

The President would issue an executive order enunciating policy in regard to government competition with business and make periodic reports to Congress on the status of such competition.

Steel Profits Rise in Second Quarter

	Net Earnings, 1st half		Sales, 1st half	
	1954	1953	1954	1953
U. S. Steel Corp.	$93,851,114	$105,016,764	$1,670,842,389	$1,920,157,222
Republic Steel Corp.	24,791,945	28,710,524	432,609,292	602,179,990
Inland Steel Co.	19,417,669	15,677,521	280,065,819	289,700,696
Armco Steel Corp.	19,001,117	16,078,533	267,071,172	291,766,453
Jones & Laughlin Steel Corp.	12,147,000	16,363,000	261,366,000	327,856,000
Youngstown Sheet & Tube Co.	9,070,694	14,944,206	220,735,008	280,340,956
Wheeling Steel Corp.	4,383,024	7,055,648	94,942,720	111,506,997
Allegheny Ludlum Steel Corp.	1,891,671	4,261,645	85,285,193	134,319,368
Lukens Steel Co.*	1,735,041	3,207,126	54,855,696	69,666,509
Granite City Steel Co.	1,549,932	3,199,869	33,410,552	44,164,555
Acme Steel Co.	1,398,749	2,554,205	33,286,576	39,624,143
Crucible Steel Co. of America	1,312,395	3,922,470	unavailable	unavailable
Rotary Electric Steel Co.	964,866	1,518,182	15,594,931	26,146,779
Continental Steel Corp.	897,881	887,687	19,205,555	21,244,514
Bliss & Laughlin Inc.	716,381	1,062,482	unavailable	unavailable
Sharon Steel Corp.	644,262	4,100,967	47,972,633	94,843,911
Copperweld Steel Co.	536,662	1,837,625	unavailable	unavailable
Alan Wood Steel Co.	445,976	1,554,318	19,998,605	32,776,709
Pittsburgh Steel Co.	318,873	3,826,612	60,690,829	78,172,891
Midvale Co.	212,759	614,183	11,656,450	15,111,405
Detroit Steel Corp.	567,743†	3,499,864	28,070,600	56,874,109

* Three quarters ended July 3. † Loss.

PROFITS for the steelmakers showed improvement in the second quarter this year. But the reduced operations caused by the inventory adjustment which began late in 1953 are holding first half profits well below the 1953 level.

Two major exceptions, however, are reported: Inland Steel Co. and Armco Steel Corp. Ingot production hit a new high at Inland as operations for the second quarter were at 102.6 per cent of capacity. Inland's profits for the first half of 1954 totaled $19.4 million, compared with $15.7 million for the same 1953 period.

Efficiency Pays Off—Armco reported profits for the first half of $19 million, up nearly $3 million from the like 1953 period. Charles R. Hook, chairman, said the increase was due to operating economies stemming from efficient new facilities introduced recently and the end of the excess profits tax.

U. S. Steel Corp., nation's largest steel producer, reported an increase in profits in the second quarter even though operations averaged only 70.7 per cent of capacity compared to 80.8 per cent in the first quarter.

Orders Improve—Republic Steel Corp.'s operations remained between 69 and 70 per cent of capacity in the second quarter. Its second-period profits were up slightly from the first quarter and brought the first-half total to $24.8 million, compared with $28.7 million in the 1953 first half. Officials noted, too, a continuous improvement in incoming orders in each succeeding month of the second quarter.

A loss of $567,743 for the first half of 1954 is reported by Detroit Steel Corp. The company reported a 9-per-cent sales increase in the second quarter compared with the first period. Total sales for the first half amounted to $28.1 million compared to $56.9 million a year ago.

Outlook—Most of the steelmakers predict third quarter operations and profits will fall below those of the second period, but that a pickup will occur in the final quarter of the year.

Materials Handling Aloft for Kitimat

Helicopters are solving some of the toughest materials transportation problems encountered by Aluminum Company of Canada Ltd. in building its hydropower and smelter project in the Kitimat area of British Columbia. During the past 37 months almost 900 tons of freight have been air-lifted into the mountains by a fleet of Bell Model 47 helicopters operated by Okanagan Helicopters Ltd.

Small Firms Do Well

In plating industry, their relative before-tax profits are higher than larger companies'

SMALL PLATING COMPANIES pay out a greater percentage of total operating costs for direct labor than do their larger associates in the industry, but they also have a higher percentage of profit before taxes, a survey by National Association of Metal Finishers Inc., Washington, shows.

In taking this survey on operating costs, the association divided the industry into four classes: Those with sales from $1 to $75,000 a year; $75,000 to $150,000; $150,000 to $300,000 and those with sales above $300,000 a year. The survey was broken down into percentages of total operating costs.

Opposite Ends—It revealed that while the average cost of direct labor for all plating companies was 30.02 per cent of total revenues, the smallest firms headed the findings at 32.1 per cent and the largest companies had the least cost at 28.63 per cent. Small platers also pay the highest percentage—13.75—for directive personnel. But when it comes to total of all salaries and wages, including fringe benefits and indirect labor costs, the largest companies stand at the top of the list with 49.67 per cent.

From the profit angle, small plating companies stand to do better before federal taxes than their larger brothers. While 12.58 per cent of total operating revenues go to profits in that group, the largest companies get only 5.35 per cent. Average for all groups is 9.37 per cent.

Go West — In another survey conducted by the association on wages and hours in the industry, results show that wages are generally higher in the West compared with four other areas surveyed. The southerly districts reported the lowest wages. Average workweek for all areas was 40 hours for a five-day week.

Appointments in Washington

Allan S. Oram, on leave from United States Steel Co., Pittsburgh, was appointed chief, Business Research and Analysis Branch, Iron & Steel Division, Business & Defense Services Administration. He succeeds William P. Carlin, returned to Republic Steel Corp., Cleveland.

Dr. William Shockley was appointed director of research, Weapons Systems Evaluation Group, office of secretary of defense. Dr. Shockley is on leave as director, Transistor Physics Department, Bell Telephone Laboratories.

New Tax Bill Shapes Up

Corporate tax will remain 52 per cent; depreciation laws are liberalized

DEFINITE IMPROVEMENT, but certainly not the last word. That's the way business and industry view the compromise version of the general tax revision bill as reported by the House-Senate conferees.

Major points affecting the business world are: 1. Corporate income tax remains at 52 per cent until Apr. 1, 1955. 2. Depreciation laws are liberalized to some extent. 3. Double taxation of dividends gets some relief.

O.K. Expected—With the exception of possible Senate trouble on the third item, the compromise bill should be accepted by both houses. Treasury department officials estimate that the bill in its present form will mean a loss of about $1.3 billion in revenue for the government in fiscal 1955.

The depreciation revision includes the Senate-approved double-declining-balance principle which embodies the sum-of-the-digit method. Under a series of optional new depreciation formulas, corporations can write off two-thirds of the cost of a piece of equipment in the first half of its life. The new depreciation will be available for new plant and equipment begun before Dec. 31, 1953, and completed later, but only on that part of the assets built after that date. Eliminated from the bill was the House provision that where the "useful life" estimate of the taxpayer and tax assessor differed by no more than 10 per cent, the taxpayer's estimate would prevail.

On Dividends—The formula for relief of dividend double taxation will exclude the first $50 and give credit of 4 per cent on the balance, except for 1954 dividends which will get 2-per-cent credit.

Approved, too, was the 23-per-cent depletion allowance for uranium and 31 other critical and strategic metals. Unchanged was the 27.5-per-cent allowance for gas and oil producers.

A Deduction—Under the compromise, employers will be allowed

to deduct for tax purposes salary paid to employees off duty because of illness. The first $100 a week would be tax exempt, but this would not apply to the first week unless the employee is hospitalized.

Conferees agreed to exempt the first $1200 of a retired persons income from federal tax for persons over 65 and those under 65 who retire on publicly financed plans like teachers, police and firemen. Personal exemption for other taxpayers remains at $600, but deductions for child care, medical care, sick benefits and dependents are liberalized.

These Failed—Tossed out by the conferees were provisions which would have given relief on income earned by corporations on foreign operations and which would deny tax exemption to foundations and charitable institutions making financial grants to subversives.

NLRB Rules In Disputes

An employer may refuse to bargain with a union representing his employees while the union is engaged in operating a competing business. That is a new ruling by the National Labor Relations Board.

Also, in a move to prevent cases of chiefly local importance from coming before it, the NLRB has announced a number of changes in standards established for determining whether it will take the jurisdiction of a particular case. Principally, the changes increase the amount of interstate business a firm must do to bring it under the board's jurisdiction.

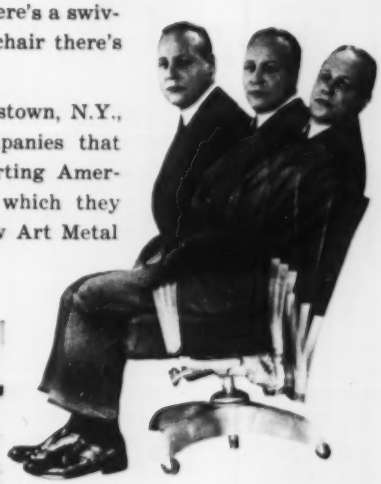
Upsetting a 1952 NLRB decision, the Court of Appeals of the Fifth Circuit has ruled that an employer need not bargain with a union which has won an NLRB election by false and misleading propaganda.

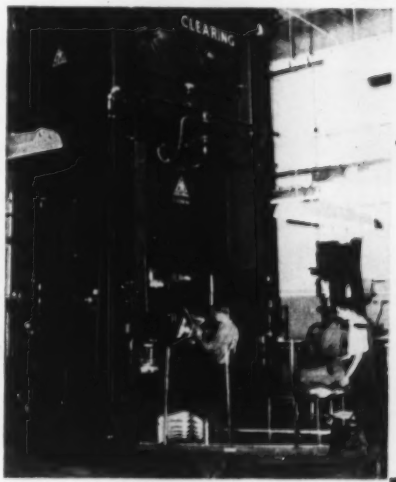
And the Federal Trade Commission has departed from the Supreme Court's enunciated rule of examining exclusive dealing contracts "per se" for legality under the Clayton Act. Instead, it has applied the "rule of reason" to examine such contracts for economic consequences and their threat to free competition.

Gentlemen, be seated . . . . .

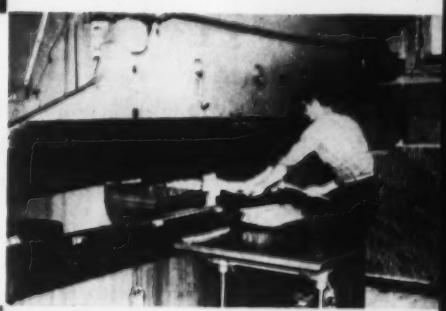
BEHIND TODAY'S EXECUTIVE there's a swivel chair, and behind today's swivel chair there's a metalworking plant, ten-to-one.

Art Metal Construction Co., Jamestown, N.Y., is one of many metalworking companies that have built a business out of supporting America's executives in the manner to which they have become accustomed. Here's how Art Metal does it.

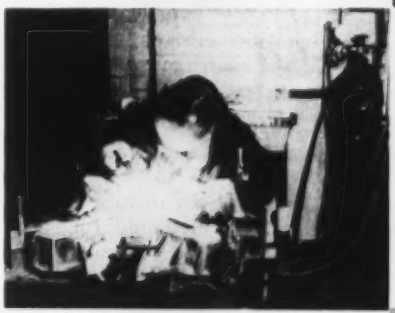




Swivel-chair bases are deep drawn from flat aluminum sheet on 350-ton Clearing press. Same press does beading operation which follows forming of base



Seamless drawn 61S aluminum alloy tubing is used for frames and stretchers. Specially made brake forms the tubing after stock is cut



Parts of chairs that receive heavy strain are welded by Heliarc process. After welding, chair assembly is heat treated and aged

At final assembly bases are fitted with upholstered seats and back frames. Each chair is then inspected and packed for shipping

By E. C. KREUTZBERG Washington Editor

Study of Critical Components Swings Into High Gear

TEMPO of mobilization base planning in the field of critical components has been stepped up sharply, and the list of categories slated for a close look to guard against shortages in a future emergency has been expanded to 30. Two study groups—on high-pressure boilers and steam turbines—are nearing the end of their work. Some of the other 28 groups are at work on their assignments, while others are in the organizational stage. The whole program is to be completed sometime in 1955.

Industry men are playing a vital part in this work by furnishing data the government needs in order to correlate as much as possible mobilization needs with existing production facilities. This permits a projection as to the amount of expansion that still is necessary in the critical areas. About 200 industry men have been recruited to study the matter. In general, the groups are held to small numbers to prevent unwieldiness. For example, five industry men have been called into the steel castings study group.

Who Decides What—The study groups concerned with these 30 categories of components are in the Commerce department. They are comprised of Commerce and Defense department representatives and the industry men, with the Office of Defense Mobilization acting as co-ordinator. An ODM Interagency Committee on Components decides what components require study, whereupon Commerce and Defense organize appropriate study groups.

When these groups are ready with their recommendations, they report to the interagency committee which, in turn, refers them to the ODM staff. If approved, they go to the ODM Borrowing Authority Review Board. Then an attempt is made to get private companies to undertake the necessary expansion through the use of accelerated tax amortization and, if necessary, guaranteed loans. If that fails, expansions can be carried out with public funds, as under the Defense Production Act.

Vance Again—This machinery will be augmented shortly by a committee of leading industrialists on the order of the former Vance Advisory Committee on Production Equipment; in fact, Harold S. Vance, president of Studebaker Corp., has been asked to serve as chairman. This committee would review the necessity for the proposed expansions, and its approval or disapproval of specific projects would govern in most cases.

UNDER SCRUTINY

The 30 component categories selected for mobilization base studies, with 1955 cutoff dates, are: Actuators; aircraft instruments; aircraft valves and fittings; automotive wheels, axles, etc.; ball roller bearings; boilers; chain and rope fittings; compressors; fans and blowers; forged steel flanges and welded fittings; forgings (except heavy steel); fractional horsepower motors; gears; gyroscopes; heat exchangers and condensers; heavy steel forgings (over 5000 pounds); hydraulic couplings; internal combustion engines (diesel); internal combustion engines (except diesel); jewel bearings; motors, generators and motor-generators; optical elements; precision fasteners; pumps; relays; steel castings (10,000 pounds and over); tackle blocks; transformers and switchgear; turbines and turbine gears; valves (expect aircraft and plumbing).

Steam Boiler Group Reports . . .

The High-Pressure Steam Boiler Study Group has reported a deficiency in capacity to produce high-pressure boilers required in the newer naval and electric power generating applications. It believes that peacetime demand for such boilers would not justify privately financed capacity expansion, even if 100-per-cent accelerated amortization were granted. Before recommending a government-financed expansion program, the group wants more information on turbine needs under mobilization.

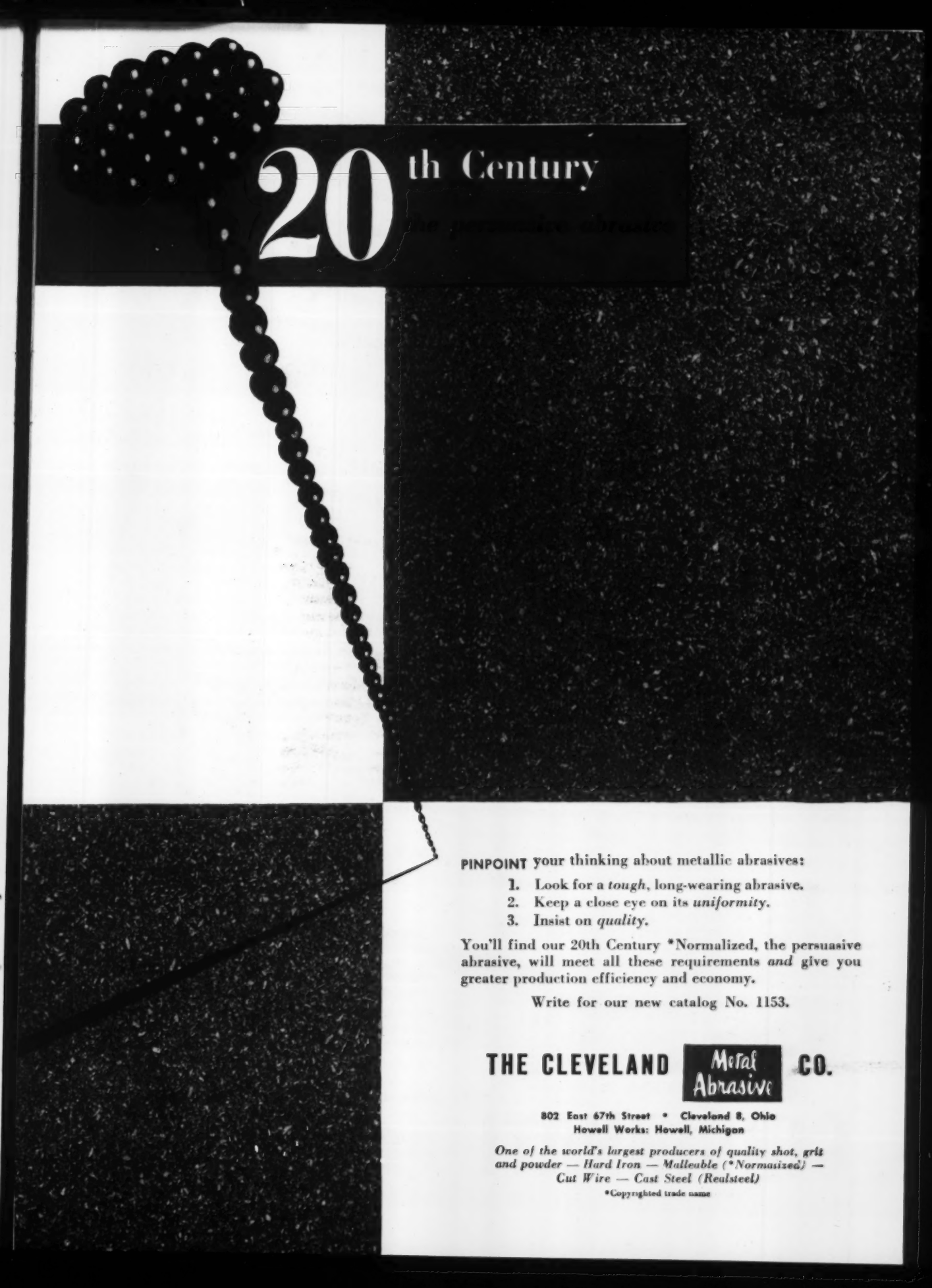
However, the group recommended that General Services Administration enter into contracts with the boiler manufacturers providing for the purchase and storage by those companies of a 90-day inventory of heavy steel plate and other steel items required for production of high-pressure boilers. The government would pay for this material and its storage.

Turbines in a Quandary . . .

The Propulsion Steam Turbine and Turbine-Driven Gear Study Group has not been able to finalize an estimate of the deficiency in existing capacity in this field because there still is uncertainty as to the use of alternate types of propulsion plants. But the group has made one recommendation calling for the expenditure by the government of about $65 million for rounding out present facilities so as to permit greater production of turbines and turbine gears.

Press Program Delays Action . . .

The Aluminum Forging and Extrusion Study Group is faced with a perplexing question. Before it can measure capacity against mobilization requirements it has to know how much the Air Force heavy press program will change present concepts—and this information is not yet available.



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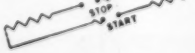
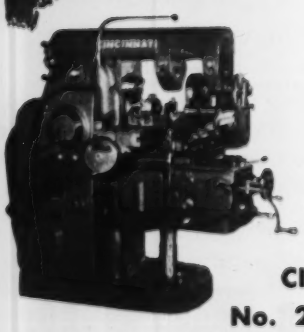
Long life is promoted through automatic lubrication systems, such as the individual reservoir for the vertical screw. Reciprocal and climb milling operations can be handled on machines equipped with automatic backlash elimination. Control levers are directional and independent for easier handling. Automatic table cycles  available for production setups (extra).



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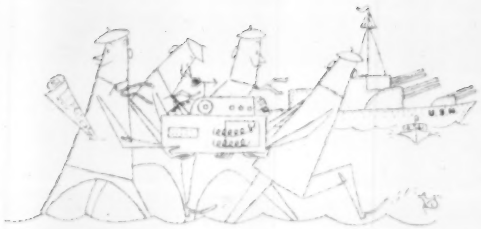
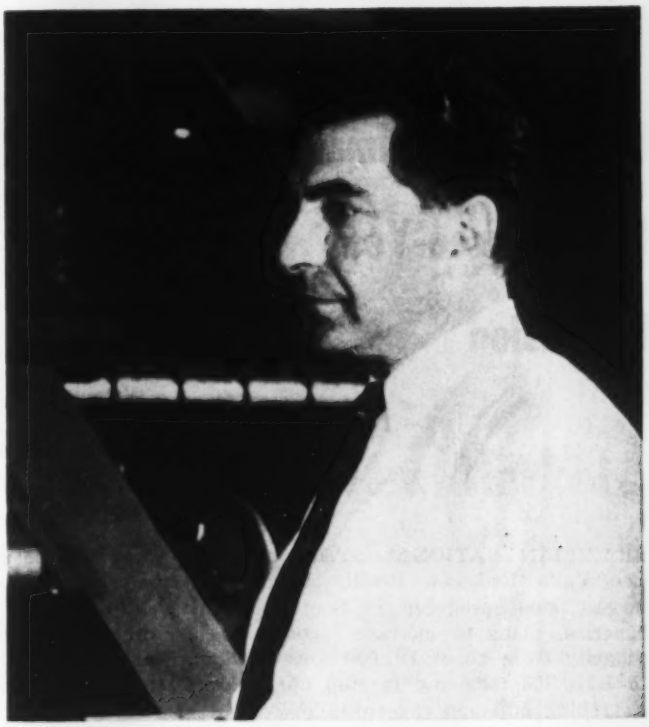




Maurice Sciaky

The Sciaky Story:

Brothers from France—20th Century LaFayettes

IT'S 1940. War clouds are massed over Europe. Germany's air armada is a dagger pointed at the world's heart. America is facing up to the job of putting thousands of warplanes into the skies.

But the distance from the drawing board to the exit end of the aircraft assembly line is a long way. We are short on know-how. We lack equipment. We even are looking for better ways to resistance weld aluminum.

The four Sciaky brothers in France have one. They have pioneered the development, and they have the equipment to weld the vital metal under closely controlled conditions. But France is overrun by Nazis.

Call the Navy—Something has to be done—and fast. The plan is simple: Call on the U. S. Navy to spirit the Sciakys, their families and an armload of blueprints out of France.

The rest is history: Manufacturing facilities were set up in a corner of the Pullman plant in Chicago, and six weeks later the four "liberated" brothers completed their first welder for the aircraft industry. By 1941, they had their own plant in Chicago. With war's end and the decline of the aircraft industry, they faced a large reconversion job. So they developed and sold welders to other industries.

Today, their sales run about $8 million. The current backlog is six months. Their slogan is: "Largest manufacturers of electric resistance welding machines in the world."

Heart in Control—The brothers insist the controls are the heart of the welder. They make their own. "First the control, then the welder," says General Manager Maurice. "It also simplifies the service problem."

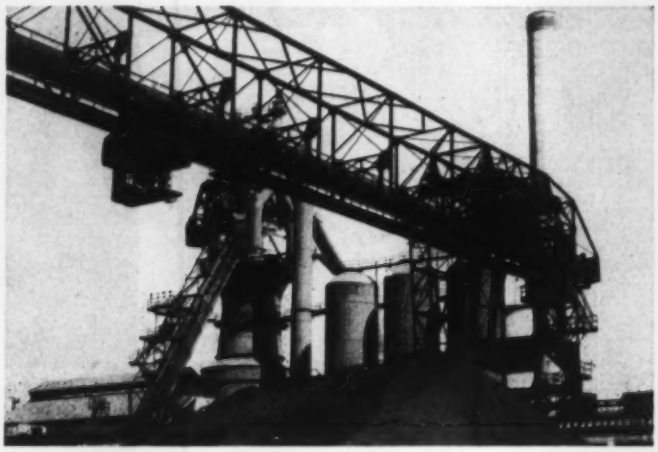
The Sciaky story is one of multiple management at work. The brothers have everything in common. Their outstanding characteristics are modesty and humility, underlaid by a quiet aggressiveness and a willingness to work hard.

To their associates they are known as Mister David (oldest and president), Mister Sam (vice president-manufacturing), Mister Maurice (vice president and general manager) and Mister Mario (youngest and manager of Sciaky plants in France and England).

Books and Music—"We lead quiet lives. Our pleasures are in a few books, good music—and building better welding machines," says Mister Maurice. "Sure, we make money, but we don't make it stupidly. We don't kill the goose that lays the golden eggs."

Mister Maurice likes to tell how his mother insisted the brothers clean their own shoes even though the family had a large staff of servants. "I still shine my own," he says.

Brazilian Steelmaker Plans Three-Year Expansion



BRAZILIAN NATIONAL STEEL Co., Volta Redonda, Brazil, the largest steel producer in South America, plans to increase ingot capacity from about 781,000 tons to 1,210,000 tons and to step up its rolling mill and coke oven facilities. Expansion will take about three years to complete.

Gen. Sylvio Raulino de Oliveira, president of the company, is in this country negotiating with the Export-Import bank, Washington, for a loan of $35 million to $40 million to help finance the project. That amount will be matched by funds from Brazilian sources.

Sufficiently Stacked — Under the new program, the capacity for rolling carbon sheets, galvanized sheets, tin plate and black plate will be increased from 271,700 tons to 528,000 tons; rails from 77,000 to 143,000; structurals from 81,400 to 106,700 tons. One coke oven battery will be added. Present blast furnace facilities—two stacks with a combined daily capacity of 2420 tons—are considered adequate.

General de Oliveira estimates Brazil's steelmaking capacity at approximately 2.2 million tons. But he feels that the country could readily consume 3.3 million tons for the expansion of the construction, transportation, power and food container industries.

Business for U. S.—Materials for the expansion will be purchased in the United States. Already his company has spent more than $68 million in this country for coal, spare parts, machinery, engineering services and insurance.

Picnics, Parties, Plays: Pleasant for Personnel

FOR AS LITTLE as 50 cents per employee per year your company may be able to institute an employee recreation program that will boost the worker's morale and make him better fitted to do his job.

Cleveland Survey — This was shown in a survey conducted by Associated Industries of Cleveland when it queried 21 member companies on their play programs for employees.

One firm spent only $800 on its 1600 office and factory workers and provided a program of bowling, softball, golf and banquets. On the other end of the string, a company of 700 employees spent $10,000 in arranging seven activities for its workers, an average of $14.29 per employee per year.

Elements—Successful company-sponsored programs generally include three types of recreation: Athletics or physical exercise of some sort; more sedentary activities such as chess, checkers and group singing; and the social side with dancing, picnics and parties.

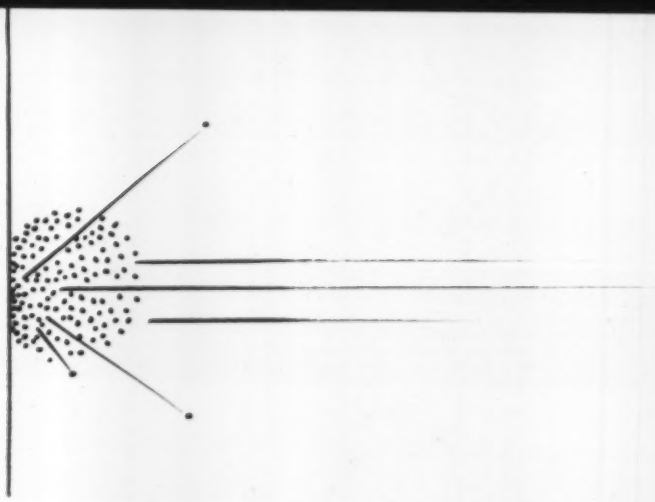
While such standard activities as bowling, golf and picnics head the list, one company reported a cooking class for employees, another a play production; two firms have fashion shows, and chess is a popular activity with workers of three companies.

Direction—It isn't necessary to have a full-time recreation director to have a full-time recreation program. Usually a member of the industrial relations or personnel department can serve as a part-time director. Some firms have employee associations which handle the entire program.

Participation in the employee recreation program is proportional to company size, says AIC—the larger the company the higher the percentage of employee participation. Best average employee participation (26.1 per cent) occurs in companies with 1000 or more employees and the lowest (22.5 per cent) in the 100-499 group.

Metal used in production of abrasives:

1937-1939 average—about 35,000 tons
1949—104,788 tons
1950—144,333
1951—165,138
1952—140,000 (Approximately)
1953—140,000 (Estimated)



Abrasives: New Uses To Bombard New Markets

BOMBARDING is becoming more popular in metalworking. Not the kind international crises are made of, but the use of abrasives in impact cleaning of metals.

In 1952 and 1953, approximately 140,000 tons of iron, steel and copper were used for abrasive purposes, reports Bureau of Mines. Peak prewar years saw no more than 40,000 tons of metal used.

Durability—Longer lasting materials are the major reason for the increase. Chilled iron was the first used, but malleable iron and cast steel now challenge iron's leadership. While premium metals outlast iron in such applications as peening, no one abrasive is considered best for all applications.

Factors in selecting abrasives, says Cleveland Metal Abrasive Co., are: Type of equipment used, finish desired, metal hardness and type of scale or material to be removed. Oversize shot may break down because of greater impact; undersize shot may be lost in some applications.

Trends—"The trend is to greater use of premium abrasives for economy," points out R. J. Steward, president of Cleveland Metal. Longer life of malleable iron and cast steel for such uses as cleaning castings cuts abrasives consumption as well as improves life of abrasive equipment.

This development of longer lasting shot and grit makes handling of abrasives more important. Malleable and cast steel abrasives, for example, must be reclaimed to utilize their full value. Modern blast cleaning equipment is making full recovery of shot as well as scales possible, comment officials of American Wheelabrator & Equipment Corp., Mishawaka, Ind.

Broadening Market—Trend is toward less concentration of abrasive sales in a single industry, more to general metalworking, says I. A. Diamondstone, vice president, Pittsburgh Crushed Steel Co., Pittsburgh. Foundries and automakers are two prime consumers of metallic shot and grit. Forgers, blast cleaners, farm equipment producers and heat treating shops are growing in importance as abrasives users.

Shot and grit shipments this year trail 1953 by 15 to 20 per cent, producers report. The sales dip has led to scattered price weakness, especially among the new, small producers. Recent steel price boosts aren't expected to affect abrasive prices because costs of iron and steel scrap and pig iron used in making abrasives are holding steady.

Growing Uses — Despite the short business decline, abrasives will continue to perform a growing number of cleaning operations, say producers. Research programs conducted by companies like Globe Steel Abrasive Co., Mansfield, O.; Alloy Metal Abrasive Co., Ann Arbor, Mich., and others are taking the guesswork out of abrasive applications.

To help customers find the best abrasive for their needs, Alloy Metal maintains laboratory facilities for pretesting. Such research programs are another reason why men like Globe's sales manager, J. R. McConnell, look for a definite pickup in fourth-quarter abrasive sales.

Metal Purchases Announced

An average 24 per cent of the domestic tungsten, manganese, chrome, mica, beryl, asbestos and columbium-tantalum authorized under the government's purchase program to stimulate the search for and production of strategic and critical materials in the United States was bought through June 30, 1954, says General Services Administration.

A total of 985,295 short ton units (20 pounds each) of tungsten has been delivered, 33 per cent of the quantity authorized to be acquired; 7,762,000 long ton units (22.4 pounds each) of manganese, 21 per cent; 64,282 gross tons of chrome, 32 per cent; 3413 net tons of mica, 14 per cent; 266 net tons of beryl, 18 per cent; 295 net tons of asbestos, 20 per cent; and 4,666,271 pounds of columbium-tantalum pentoxide, 31 per cent of quota.

PRODUCTION PROBLEM?

if you use flat-rolled steel talk to a specialist

PROBLEM With present designs and manufacturing facilities, the auto industry needs wide coils of sheet steel with a minimum number of welds. These welds must be cut out before steel goes into the big presses—a costly, time-consuming process.

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Chrysler's Colors Highlight L.A. Plant

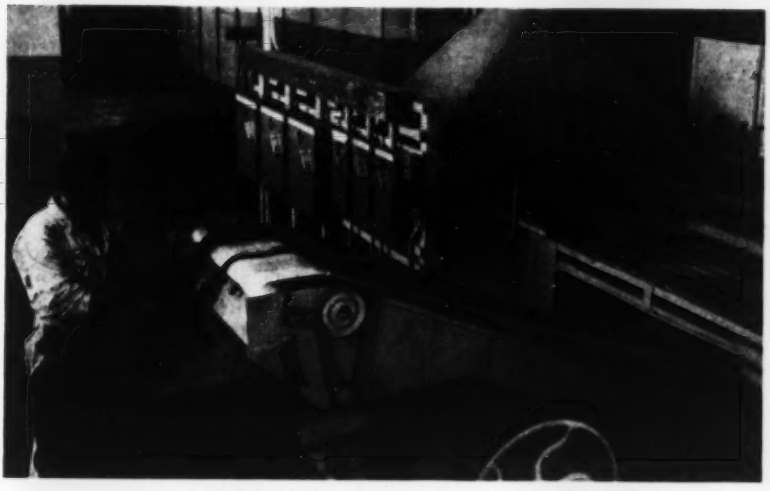
LOS ANGELES

YOU'LL LOOK FAR among the West Coast's auto erector set to find a plant more promising than the newly revised Chrysler Corp. facility in Los Angeles. Being tooled in the latest mode to absorb full western production of Plymouth, Dodge, DeSoto and Chrysler cars, the plant sparkles with the production elan of a Beverly Hills malt shop.

Literally most colorful in this plant is the newly installed spray paint setup. Reportedly considered a 20-month project in the industry, the facility is virtually complete in six months. Incorporated are many of the latest ideas in use by other plants, but the new arrangement goes beyond the known best with some innovations of its own that rather outstrip much of the equipment in the industry.

Western Automation—From the time they are unloaded in white until they're ready for trim, the Plymouth bodies going through the booths today come very close to being automatically processed. Starting with the new models of the corporation in the fall, all bodies will be framed and painted in the plant bringing the full automaticity of the setup into play.

Moving along a conveyor, the body trips an electric eye system in the prime coat spray booth which actuates guns aimed to cover the body completely and uniformly as it passes through. Although it appears somewhat like a car-washing machine, the guns are adjusted so precisely that better paint coverage is claimed than by even highly skilled hand operators. The only human assistance necessary in the process is hand-spraying of the



TOP—Inside the spray booth. Spray guns on tracks follow contours of the body. Endless-belt floor gratings are continuously cleaned in lye

CENTER—Excess paint is reclaimed from water bath by cheesecloth conveyor. After processing, reclaimed paint will become underbody primer

BOTTOM—54 miles of pipe feed paint to spray booths from this mixing room housed in a special building. Each drum holds a separate color

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door and window openings since the guns to do this tricky job automatically would cost more than the workmen they replaced.

Sans Wet-Sanding—With the coat complete, including a coat of "Equasheen" on the under side of the body, the shell moves into a drying oven and returns to the finish paint booth. Eliminated here is the tedious wet-sanding operation still standard in many plants. A plant spokesman explains that paint and process developments now give a better finish through natural surface smoothness than sanding does.

The finish spray booth is the plumber's dream of an installation. Equipped to spray 52 colors at present, the booth will handle 73 hues for 1955 buyer edification. It involves 54 miles of pipe from the mixing room.

Almost Human—Spraying is accomplished through use of two spray guns mounted on slightly curved vertical tracks to follow the general body contour. Adjustable for length of stroke, these electrically oscillated guns can paint a whole body or the lower half of a two tone with the assistance of the operator once again only in hand painting the door and window openings. Levers on the floor are tripped by the body dolly as it moves through the booth to start the guns automatically at the proper moment for full paint coverage of two-tone or single color. As in the prime spray booth, the uniformity of coverage is reported extremely high.

Also of interest is another spray booth just put into operation which automatically sprays hoods and fenders. The pair of fenders and hood for a given car are loaded into a circular rack about 4 feet high and about the same in diameter. As the rack enters the spray booth it is rotated, and spray guns are actuated automatically. Rotating about six times during the 12 seconds they are in the booth, the parts emerge from the final line with two coats of paint, ready to be installed on the car.

Facilities Fascinate — Perhaps the most interesting part of the setup, however, is not in the actual spraying itself but in the facilities around the guns. Heat and humidity are very closely controlled through an elaborate system of ventilating fans in the best modern practice. But believed unique to the installation is a moving grid in the spray booth. Traveling through a caustic bath at the rate of a foot per minute, the grid is being changed continuously to provide a clean surface for the workman. This replaces the former laborious job of periodically removing the grids and cleaning the accumulated paint off of them.

Under the grid is a moving water curtain which carries the excess paint to the end of the booth. There a roll of cheesecloth slowly moves across a water return at the end of the tank filtering out the paint particles to be reclaimed. This pigment, when chemically processed, has been found to yield a superior underbody primer. Light gray in color, this is the "Equasheen" mentioned earlier. Meanwhile, the water, maintained at a constant level by floats, can be used over and over.

Deposit on Account — After painting, the bodies feed to banks for final assembly scheduling. The need to change hoses containing different colored paints makes color grouping of six or eight bodies desirable. At present the bank will handle about 300 bodies, but this capacity may be increased by double-decking should the need arise.

When called for, the body moves down the new trim line which boasts more parts storage space than most such facilities in the industry. After initial trim, which with paint is located upstairs, the body leaves its dolly and moves downstairs for further trim including assembly of the front end on the car before the body is dropped. Throughout the length of this overhead conveyor system, the body moves upward or downward on inclines to position it at the best height for the operation being performed, thus reducing worker fatigue and improving quality.

Four-in-One—Body dropping is accomplished as in the Plymouth plant in Detroit through bringing the chassis floor and body overhead conveyors together. But in this case the system will operate for all of the four corporation makes.

Now operating only one chassis line producing Plymouths, De Sotos and Chryslers, the plant will open a second chassis line as well as a second body trim line when full production gets under way in the fall. At that time, DeSoto and Chrysler bodies now being nearly completed in Detroit and shipped 15 to the box car will start moving through the yet-to-be-completed framing line and the paint and trim systems. Also to be added will be Dodges currently in production at San Leandro on the West Coast.

Red Ram Pawn—Under this system of operation, it is expected that Plymouths will largely occupy the production capacity of one line with Dodges, DeSotos and Chryslers coming down the other. However, Dodges can be used as the pawn in the operation, being shifted from one to the other as required to balance output.

When the snow begins to fly in Detroit, the sunny California operation should be meeting its new production goal of 100 cars per hour, a mighty warming prospect indeed.

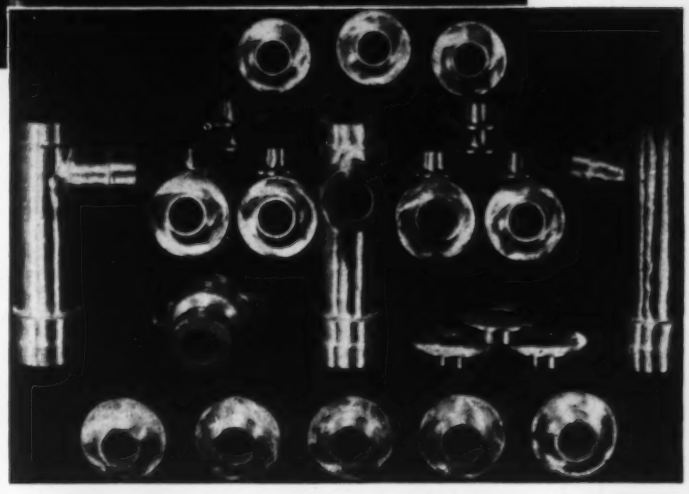
Auto, Truck Output

U. S. and Canada

	1954	1953
January	594,789	614,000
February	573,801	628,017
March	672,485	752,149
April	676,233	782,491
May	621,249	684,843
June	623,732†	713,778
July		757,595
August		641,152
September		605,228
October		651,153
November		457,852
December		529,588
Total		7,817,846

Week Ended	1954	1953
June 26	140,695	173,702
July 3	133,141	140,724
July 10	106,169	167,560
July 17	130,763	175,599
July 24	129,582	172,874
July 31	131,000*	168,267

Source: Ward's Automotive Reports. †Preliminary. *Estimated by STEEL.



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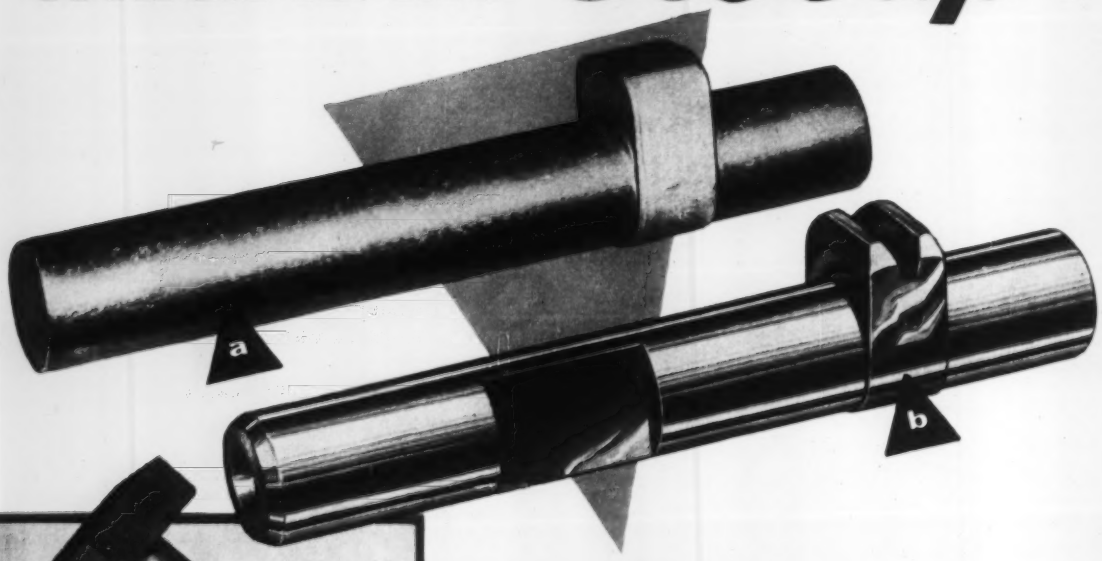

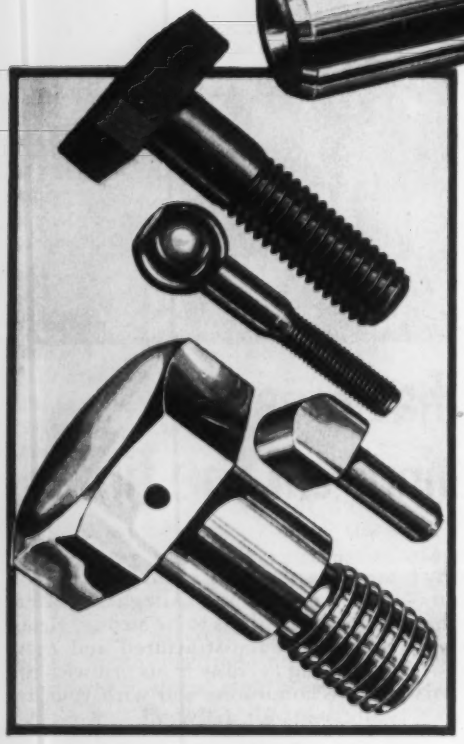

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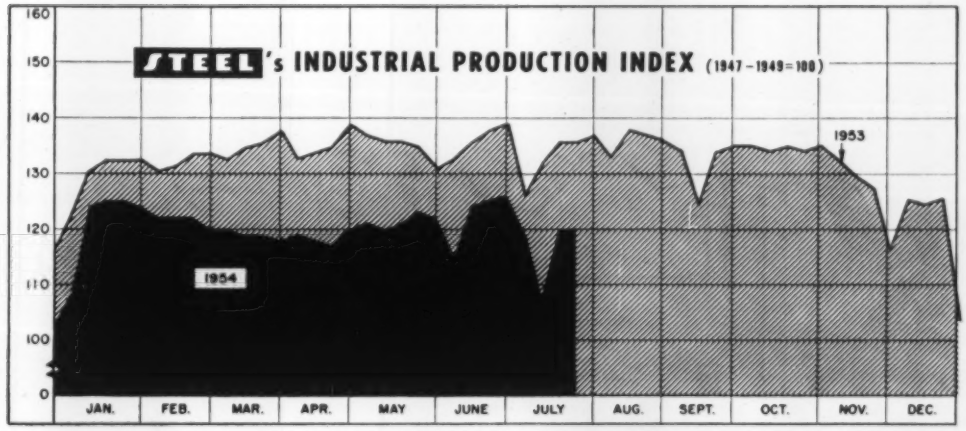

LATEST WEEK*	120
PREVIOUS WEEK	120
MONTH AGO	124
YEAR AGO	136

* Week ended July 24.

Based upon and weighted as follows: Steel Output 35%; Electric Power Output 32%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 11%.

Auto Retooling Begins Earlier, Lasts Longer

AS AUTOS GO, so goes the economy.

That generality is close enough to the truth to cause concern as automakers slow up for model shifts. Changeovers are beginning earlier this year, lasting longer. Until the big debuts in October or November, auto output will be sluggish, and so probably will be STEEL's production index, now at a so-so 120 per cent of the 1947-1949 average.

Chrysler's Plans — Chrysler Corp. will utilize its annual plant inventory period for the shift. Start as well as duration will vary from plant to plant. Plymouth's Detroit plant will begin the second week of August with others following suit before the month is over. The halt in carbuilding is expected to affect at various times about 38 per cent of Chrysler's 107,000 employees.

Full-scale operations will be resumed in all plants in September with stepped-up production the order of the day.

Long Shutdown — Chevrolet's Detroit gear and axle plant will begin changeover August 13. The plant may be closed as long as 6 to 8 weeks, giving some indication of the extent of Chevvy's restyling plans. Another reason for the length of time is that much improved equipment will be installed.

American Motors Corp. will close its Los Angeles assembly plant for an indefinite period for inventory and changeover. But in response to increased orders Nash production is going up 18 per cent beginning August 16. This boost will bring back about 500 workers in Nash's Wisconsin plants.

New Look—Major changes are in order for many makes. Radical changes are expected in all Chrysler Corp. lines. Ford's three makes are also due for more than a face lifting.

For General Motors, Chevrolet and Pontiac will get complete revamping; Buick, Oldsmobile and

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	1,538	1,557	2,087
Electric Power Distributed (million kwhr)	8,925[1]	8,951	8,460
Bitum. Coal Output (daily av.—1000 tons)	1,203	890	1,526
Petroleum Production (daily av.—1000 bbl)	6,250[1]	6,298	6,569
Construction Volume (ENR—millions)	$259.3	$431.1	$264.2
Automobile, Truck Output (Ward's—units)	129,582	130,763	172,874
TRADE			
Freight Car Loadings (unit—1000 cars)	698[1]	695	781
Business Failures (Dun & Bradstreet, no.)	215[1]	226	184
Currency in Circulation (millions)[3]	$29,854	$29,981	$30,051
Dept. Store Sales (changes from year ago)[3]	+5%	−16%	+2%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$19,985	$19,297	$18,177
Federal Gross Debt (billions)	$270.9	$271.0	$272.5
Bond Volume, NYSE (millions)	$19,613	$22,421	$11,440
Stocks Sales, NYSE (thousands of shares)	12,881	12,826	4,471
Loans and Investments (billions)[4]	$81.1	$81.1	$80.0
U. S. Gov't. Obligations Held (billions)[4]	$33.5	$33.6	$33.3
PRICES			
STEEL's Finished Steel Price Index[5]	194.25	194.15	189.18
STEEL's Nonferrous Metal Price Index[6]	215.8	215.6	205.7
All Commodities[7]	110.1	110.2	111.0
Commodities Other Than Farm & Foods[7]	114.2	114.2	114.5

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1954, 2,384,549. 1953, 2,254,459. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

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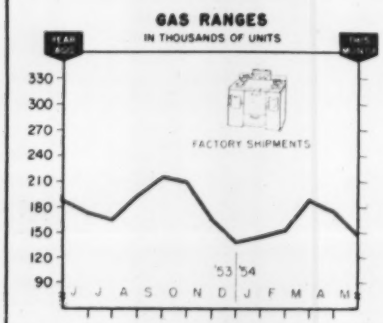
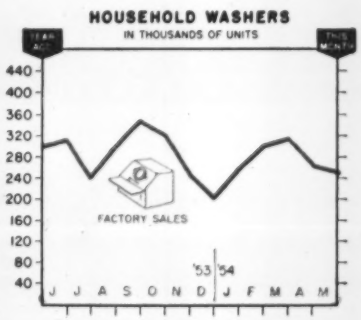


Shipments—Units

	1954	1953	1952
Jan.	137,000	169,200	166,100
Feb.	152,900	185,900	166,200
Mar.	188,500	208,200	185,200
Apr.	170,400	220,300	182,300
May	149,600	181,000	162,500
June	.....	166,600	175,700
July	.....	159,000	154,200
Aug.	.....	186,800	178,600
Sept.	.....	209,500	199,600
Oct.	.....	203,900	239,700
Nov.	.....	158,500	186,400
Dec.	.....	134,400	178,600
Total	.....	2,183,300	2,175,400

Gas Appliance Mfrs. Assn.



Sales Billed—Units

	1954	1953	1952
Jan.	249,956	277,309	213,998
Feb.	295,171	328,604	255,884
Mar.	307,862	345,989	248,431
Apr.	258,712	288,474	217,211
May	246,944	286,515	213,668
June	.....	304,086	274,457
July	.....	228,268	207,593
Aug.	.....	291,240	254,537
Sept.	.....	340,532	283,732
Oct.	.....	310,867	327,814
Nov.	.....	238,153	293,079
Dec.	.....	191,570	310,661
Totals	.....	3,429,627	3,101,045

American Home Laundry Mfrs. Assn.

Charts Copyright 1954 STEEL.

Cadillac will stay about the same. Packard is slated for a V-8 and new transmission. The other independents probably will be just warmed over.

Balancing Act . . .

President Eisenhower says the administration is two-thirds of the way to balancing the budget. The $3-billion deficit at the end of fiscal 1954 was about $250 million less than predicted in January.

These achievements were particularly cited by the President:

1. Tax cuts totaling $7.5 billion.

2. A halt to inflation; the purchasing power of the dollar varied only a half cent in the past 18 months.

3. New confidence; a firm base has been laid for a healthy and expanding economy for better national security and for more jobs for more people.

The lower deficit came in spite of smaller than expected receipts from individual and corporate income taxes and higher refunds. But the bulk of federal income, as expected, came directly out of Charlie Citizen's pocket. Personal income taxes amounted to $32.4 billion.

Corporate income taxes were $21.5 billion and excise taxes brought in $10.0 billion.

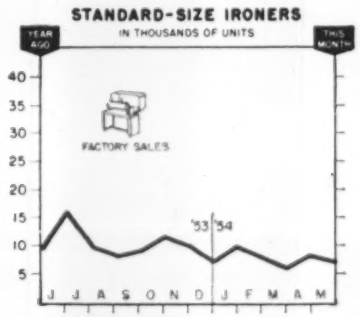
National security (Defense department, mutual aid, AEC and stockpiling) got the biggest chunk of cash, $48.7 billion, a reduction of $2.5 billion from January estimates. Veterans, grants-in-aid and agricultural price supports accounted for $14.3 billion, and all other programs had to settle for a share of the remaining $7.1 billion.

Second-Best Year Forecast . . .

This year is likely to be the second-best business year in history surpassed only by 1953, says U.S. Chamber of Commerce. Activity at the end of June was comparable to three of our most prosperous years, 1950, 1952 and 1953.

Gross national product was at a yearly rate of $356 billion compared with $348 billion in 1952 and $287 billion in 1950. In 1953 it was $367.2 billion. Disposable income this year is higher than in any of the three years used in comparison.

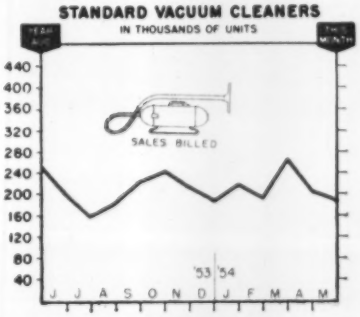
In June 62.1 million people were employed against 63.2 million a year ago. Unemployed totaled 3 million this June, 1.6 million a



Factory Sales—Units

	1954	1953	1952
Jan.	9,792	24,395	15,636
Feb.	8,208	22,586	17,630
Mar.	6,025	16,066	13,913
Apr.	8,358	14,080	8,938
May	7,210	9,323	12,652
June		12,529	17,654
July		9,626	15,025
Aug.		8,067	16,477
Sept.		9,113	22,492
Oct.		11,666	25,204
Nov.		10,105	19,724
Dec.		6,908	16,798
Total		154,464	202,143

American Home Laundry Mfrs. Assn.



Sales Billed—Units

	1954	1953	1952
Jan.	221,233	255,886	223,357
Feb.	199,035	246,007	230,226
Mar.	276,464	329,294	290,092
Apr.	220,849	265,548	217,169
May	209,434	252,404	216,969
June	195,781	197,506	206,939
July		159,446	188,715
Aug.		188,536	222,413
Sept.		227,253	237,541
Oct.		249,383	292,474
Nov.		216,227	254,297
Dec.		190,773	249,032
Total		2,781,263	2,841,803

Vacuum Cleaner Mfrs. Assn.

year ago. The 1954 unemployment figure is 5 per cent of the labor force, the same percentage as in 1950.

Construction Stays High . . .

Construction continues to brighten the economic outlook. Contract awards made in first half ($9.25 billion in 37 Eastern states) insure high payrolls and purchases for the remainder of 1954, says Dr. George Cline Smith, economist for F. W. Dodge Corp.

He expects the effects of high activity of this $35-billion-a-year industry to be a powerful force in creating new business in other fields.

Significant trends as seen by Dr. Smith are:

1. Continued strength of residential construction well beyond the expectations of most forecasters and a strong trend toward construction of single family homes at the expense of multi-family housing.

2. A sharp drop in awards for construction of manufacturing facilities (due to cuts in the atomic energy building program which is listed under this category) offset by sizeable increases in the commercial category.

3. Continued growth in the importance of schools as a major factor in the construction boom.

Home Laundry Surge Due . . .

Second-half sales of home laundry appliances will be up as much as 25 to 50 per cent over first half and a year ago, producers estimate. Very few expect business to fall off, reports W. Homer Reeve, president of American Home Laundry Association and head of Easy Washing Machine Corp., Syracuse, N. Y.

Reasons for the optimism: Dealer and distributor attitude has changed from last year's pessimistic outlook; inventories are coming into line; 1 million new homes a year are being built.

Air Conditioner Sales Climb . . .

Air conditioner sales have followed the thermometer this season. They were low in May and early June. Then an upswing began. Frigidaire reports sales in July almost double those of a year ago. York Corp.'s sales also are up, but profit margin is down — mainly because of salary increases and price reductions to meet competition.

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—if the fabricating operations are not too complicated and do not require intricate expensive dies.
—if a fine surface finish is not essential.
—if a good base for paint or enamel is desired.
—if you do not object to some "square footage" loss due to oversize variation.
—then Sheet Coil will probably be the most economical material for the job.

CONSIDER THINSTEEL

—if you must have a high degree of uniformity of chemistry and physical properties—and precision gauge tolerances.
—if you wish to keep die wear low, no oversize gauge variations.
—if you require a fine finish or a better base for plating.
—if you want maximum yield for "most finished parts per ton."
—if you want selected tempers for maximum strength and lightest weight.
—then you'll find Thinsteel the most economical material by far.

You can always count on Kenilworth helping you get the right steel for your requirements. Order Sheet Coil or Thinsteel and notice that each coil carries an identifying tag as pictured above. Call on Kenilworth, too, for your needs in Stainless Sheets or flat rolled Spring Steels (Annealed or hardened and tempered).

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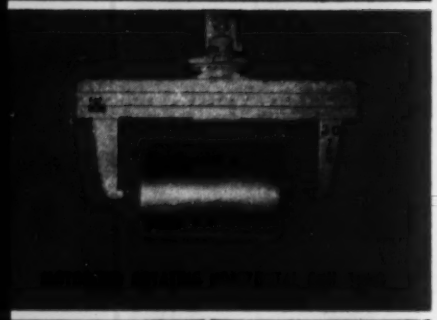

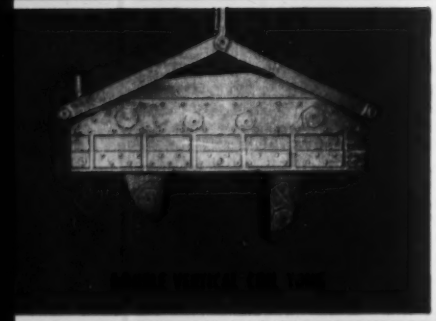

Engineered for your Coil Handling Jobs

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AUTOMATIC AND MOTORIZED

SAFE-T-TONGS

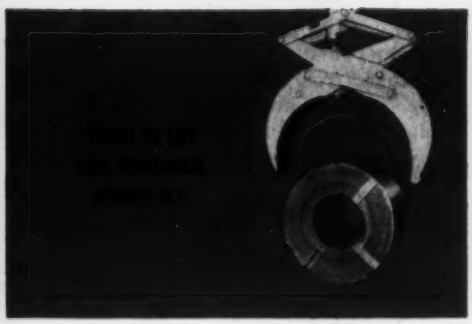
Coil handling problems differ from one plant to another. And Heppenstall's Safe-T-Tongs are designed to fit each set of specific requirements . . . *yours* for instance.

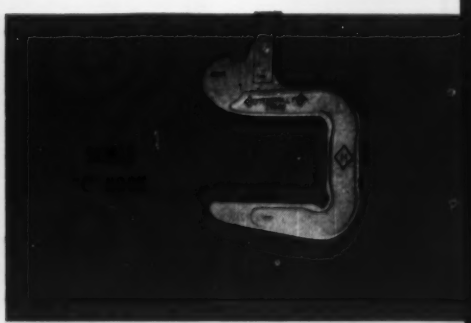
Heppenstall's Safe-T-Tongs (for coils) are lifting steel strip weighing up to 35 tons per coil—safely and economically. They are designed to lift coils vertically or horizontally—or grasp coils circumferentially as required.

Heppenstall Safe-T-Tongs for coil handling jobs have stepped up efficiency—lowered overall costs—decreased damage to coils—and improved safety conditions in plant after plant. They'll do the same for you.

Our engineers would like to work with you in designing tongs to meet *your* specific requirements. Write us today.

You'll want this new catalog. It contains solutions to many materials handling problems. We'll be pleased to send you a copy. Address: Heppenstall Company, Pittsburgh 1, Pa.





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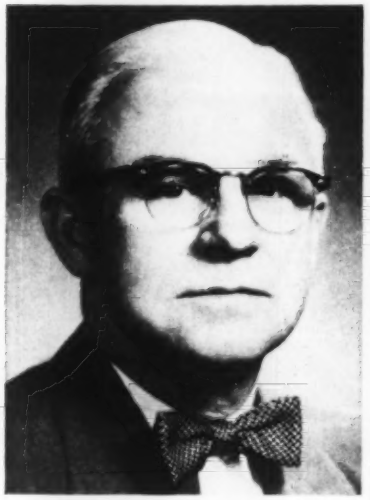
. . . tongs for every lifting problem



ARCHIE F. WILSON
. . . H-P-M manufacturing director

STEPHEN J. MORRIS
. . . Morse Chain gen. purchasing agent

L. J. ROHL
. . . U. S. Steel chief metallurgical eng.

Hydraulic Press Mfg. Co., Mt. Gilead, O., appointed **Archie F. Wilson** director of manufacturing. Prior to joining H-P-M, he was manager of plant operations at Mather Stock Car Co., Chicago.

Harold Nutt was made vice president and general manager of **Borg & Beck Division**, Borg-Warner Corp., Chicago. He previously was vice president and assistant general manager. **Richard L. Smirl** was named director of engineering.

Clary Multiplier Corp., San Gabriel, Calif., appointed **Elmer L. Harrison** to the new combined post of tooling superintendent and master mechanic, and promoted **Robert Rosenast**, chief industrial engineer, to assistant production manager for business machines and general manufacturing.

Star Machine & Tool Co., Minneapolis, appointed **Fred F. Storms** to its sales staff in the capacity of western sales manager.

Cline H. Welch was elected president, **Alloy Cast Steel Co.**, Marion, O., to succeed **Robert C. Owens.** Mr. Welch has been vice president-general manager for many years. Other officers elected are **Keith A. Welch** as vice president-works manager; **Charles G. Carlisle** as secretary-treasurer.

Stephen J. Morris was made general purchasing agent of **Morse Chain Co.**, Detroit, division of Borg-Warner Corp. He heads purchasing for both the Detroit and the Ithaca, N. Y., manufacturing plants with headquarters at Ithaca.

Eugene Parks was elected president, **Fonda Gage Sales Corp.**, Stamford, Conn. He formerly was eastern sales manager-engineering for Grotnes Machine Works Inc.

Wallace M. Pattison was elected president of **W. M. Pattison Supply Co.**, Cleveland, to succeed his father, the late **C. V. Pattison.** Other changes include election of **A. B. Rathbone** as first vice president and chairman, and **W. H. Sickman** as second vice president and assistant treasurer. **H. B. Fuller**, vice president in charge of purchases, assumes the additional duties of general manager. **Paul Levy** was elected comptroller. **A. C. Vaughan** continues as treasurer and **R. C. Combs** as secretary.

William Hughes is sales promotion manager for **De Soto Division**, Chrysler Corp., Detroit.

At **Eaton Mfg. Co.'s** Saginaw, Mich., division, **Vincent Ayres** was made chief engineer, **G. D. Line** assistant chief engineer and **P. J. D'Arcy** assistant to the sales manager.

L. J. Rohl fills the newly created position of chief metallurgical engineer of **United States Steel Corp.**, New York. He is succeeded as chief metallurgical engineer of steel operations by **R. W. Simon.**

Norman B. Pilling, director of the Bayonne, N. J., research laboratory of **International Nickel Co. Inc.** since 1939, assumes new duties as assistant to the vice president-manager of the company's development and research division in New York. He is succeeded by **Dr. W. Andrew Wesley** as head of the Bayonne laboratory, with the title of manager. **Dr. J. T. Eash** becomes assistant manager.

George E. Kemper is the new general manager, welding products division, **A. O. Smith Corp.**, Milwaukee. He succeeds **J. J. Bohmrich**, resigned.

Edward F. Euphrat was advanced to executive vice president of **Pacific Can Co.**, San Francisco, and **Jack S. Euphrat** was promoted to vice president-research and development.

Milton S. Angier was made product manager of heat pumps for the air conditioning division of **Westinghouse Electric Corp.** He will have headquarters at Staunton, Va., upon completion of the

NEILL S. BROWN
. . . Packard car div. manufacturing mgr.

DENNIS L. GALLOGLY
. . . Cooper-Bessemer chief engineer

ROBERT H. WASZ
. . . Ryerson merchandise-procurement dir.

division's new plant now under construction.

Neill S. Brown was named manufacturing manager of the car division, **Packard Motor Car Co.**, Detroit. He has had his own automobile dealership for the last year in Kansas City. He formerly was manager of production operations at Lincoln-Mercury Division, Ford Motor Co.

Chicago Molded Products Corp., Chicago, named **Edward F. Bachner Sr.** to the newly created post of chairman of the board. **Marcel F. Bachner**, formerly vice president-treasurer, was elected president-treasurer. **John J. Bachner** was promoted to executive vice president and general manager.

William C. Kollman was made assistant superintendent, electric furnace department, at the Midland, Pa., Works of **Crucible Steel Co. of America**. He was formerly with Republic Steel Corp. **Joseph Schrader**, formerly assistant superintendent, was transferred to the metallurgical department of the Sanderson-Halcomb Works at Syracuse, N. Y., assigned to development and use of Hi-Speed steel.

Irwin Burton was made a regional sales manager for **Breuer Electric Mfg. Co.**, Chicago.

William T. Hunt was appointed chief metallurgist for **New Process Gear Corp.**, Syracuse, N. Y.

Cooper-Bessemer Corp., Mt. Vernon, O., promoted **Dennis L. Gallogly** to chief engineer, product division. He replaces **Robert F. Lay**, recently made assistant general sales manager. **Samuel F. Lamb** becomes service manager.

At **Chrysler Corp.'s** Amplex Division, Detroit, **G. W. Trichel** was promoted to executive vice president and general manager. Before joining the division early this year as vice president and a director he served in a similar capacity with the Fargo Division. **Thomas F. Morrow** was made general manager of Chrysler's defense operations.

Joseph T. Ryerson & Son Inc., Chicago, made **Robert H. Wasz** director of its merchandise-procurement division. He was manager, procurement department.

Thomas L. Fawick, chairman of the board of **Federal Fawick Corp.**, Cleveland, was also elected president. He assumes the post vacated by **Richard S. Huxtable** whose employment was terminated by the board.

Thurston Klayton, director of engineering research and development for **Luria Engineering Co.**, New York, was given the additional title and duties of chief engineer. He is in charge of the en-

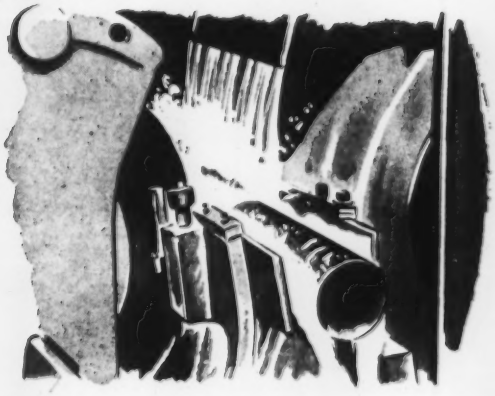
G. W. TRICHEL

THOMAS F. MORROW

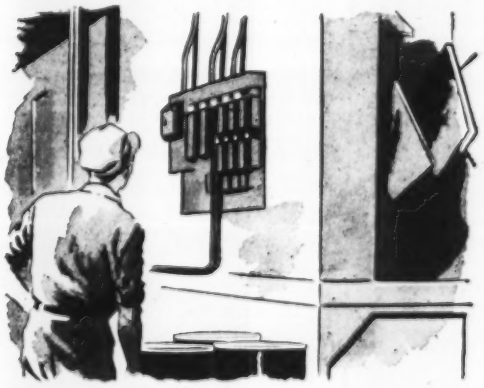
. . . Chrysler Corp. appointments for Amplex Div. and defense operations

New S.E.C.O. is Tops For These Operations

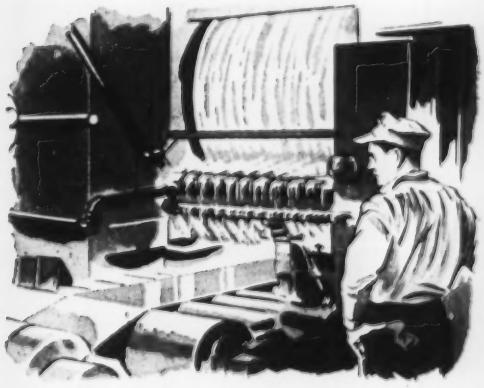
CUTTING WITH NEW S.E.C.O. Tools stay cool—require less frequent grinding. Finishes are uniformly good.



GRINDING WITH NEW S.E.C.O. Surface finishes are good. Loading and glazing of wheel are reduced—wheel life is prolonged.



WASHING WITH NEW S.E.C.O. Thorough removal of grease and dirt provides clean surfaces for smooth, long-lasting finishes.



ROLLING WITH NEW S.E.C.O. Rolls stay clean. You get maximum reductions and low power consumption.

New Sunoco Emulsifying Cutting Oil increases production, cuts operating costs. Its high machining efficiency permits uniformly good finishes, prolongs tool life. Its high detergency and purity keep tools, parts and machines clean. Its excellent mixing qualities permit its use in cold, hard or hot water. Test New S.E.C.O. in your own plant. For more information, call your nearest Sun office or write SUN OIL COMPANY, Philadelphia 3, Pa., Dept. S-8.

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Refiners of famous High-Test Blue Sunoco Gasoline

A. L. COULSON
. . . Ford Instrument asst. sales mgr.

WILLIAM C. HEILBRUN
. . . Kaiser Metal aircraft div. procurement

GEORGE M. EDINGER
. . . Burrell Corp. sales manager

gineering staff headquartered at Bethlehem, Pa.

A. L. Coulson was made assistant sales manager of Sperry Corp.'s **Ford Instrument Co. Division**, Long Island City, N. Y. In addition he serves as manager, Navy contracts. **W. F. Weber** is manager, Army contracts and **W. V. Warner** of Air Force contracts. **James R. Coleman** is manager, commercial contracts and **J. A. Barrett** of component contracts.

Robert P. Petersen was named sales manager, Automatic Spring Coiling Co., Chicago.

Lee Lewis was elected vice president and director of **MoPar Motor Parts Corp.**, Detroit, a division of Chrysler Corp. **S. J. Wall** was made director of sales.

Glenn Koger was named manager of the Torrance, Calif., plant of **Rome Cable Corp.**

William C. Heilbrun was made procurement director of **Kaiser Metal Products Inc.'s** aircraft division, Bristol, Pa. He joined the firm in 1942 and has been assistant procurement director.

Stanley Arbeit, former sales manager, **Rochester Machine Screw Co.**, was appointed general manager of the Rochester, N. Y., plant of **Leroy Plow Co. Inc.**

Henry J. Christ Jr. was promoted to manager of purchases and planning superintendent of **Deepfreeze Appliance Division**, Motor Products Corp., Chicago, to succeed **Darrell Simpson**, resigned.

Stanley M. Bixler was made manager of **Continental Can Co.'s** Harvey, La., metal can plant.

Robert W. Clarke was named manager of the new **Pennsylvania Salt Mfg. Co.'s** plant at Delaware, O.

Burrell Corp. promoted **George M. Edinger** to sales manager. With headquarters in Pittsburgh he will conduct an expanded sales program for the firm's scientific apparatus and laboratory chemicals.

Eugene H. Kinelski joined **Dwight-Lloyd Inc.**, Netcong, N. J., division of Sintering Machinery Corp. He will be engaged in research, development and sale of ore beneficiation plants and sintering and pyrolizing equipment in the metallurgical field.

William McBee was made purchasing agent of **Helipot Corp.**, South Pasadena, Calif., division of Beckman Instruments Inc. He formerly was with Proto Tool Co.

Robert O. Isenbarger was named assistant vice president and chief engineer of **Chicago Rawhide Mfg. Co.**, Chicago, and **Al S. Berens** was named director of engineering.

OBITUARIES . . .

George T. Trundle Jr., founder and chairman of **Trundle Engineering Co.**, Cleveland, died July 16.

Dr. Harry A. Schwartz, 74, for a half century connected with **National Malleable & Steel Castings Co.**, Cleveland, died July 25. He established a department of research and served as manager until retirement in 1953. He continued service with the firm in an advisory capacity as assistant to the vice president-production. For contributions to the foundry industry Dr. Schwartz received, among other awards, the John A. Penton Gold Medal of the American Foundrymen's Society.

S. Fabian Goodman, 67, senior partner in **Bearings Industry Co.**, New York, died July 16.

Charles H. Heist, 66, who retired May, 1953, as general manager, **Hanna Furnace Corp.**, Buffalo, died July 15.

Edward J. Wilson, 54, manager, metal lath department, **Ceco Steel Products Corp.**, Cicero, Ill., died July 14.

Ernest P. Bartlett, 80, head of **E. P. Bartlett & Co.**, Chicago manufacturers representative for copper wire, died July 16.

Earl C. Givens, 57, vice president in charge of sales and engineering of **International General Electric Co.**, New York, died July 20.

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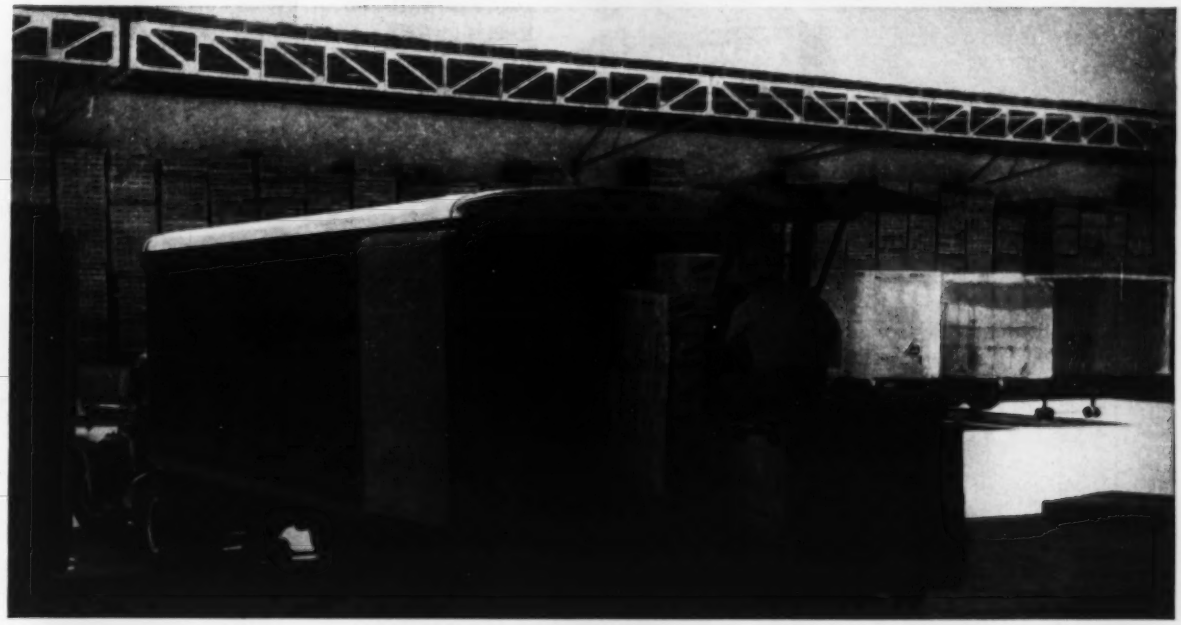
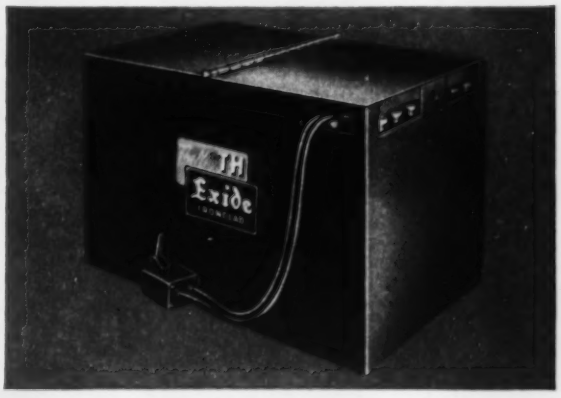


FAST LOADING of highway trucks is assured by the use of fork trucks powered with Exide-Ironclad batteries. An abundance of reserve power keeps trucks working at full speed the entire shift . . . with no unscheduled down time.

Exide battery power means precise spotting with "finger-tip" control, safe handling, no fumes or fuss. Also, proven lower costs for operation, maintenance, and depreciation make Exide-Ironclads your best power buy—AT ANY PRICE!

THE POSITIVE PLATES are the heart of any battery. Only Exide uses a slotted tube construction. By use of tubes, more active material is exposed to the electrolyte, providing *greater power.* Also, more active material is retained, *giving longer working life.*



THE NEW THRIFTY HAULER! The improved industrial truck battery. *Non-oxidizing* plastic power tubes assure longest battery life, more capacity in the same space. For full details, call your Exide sales engineer—write for Form 1982 (Installation and Maintenance of Motive Power).

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IRONCLAD® BATTERIES

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For Stainless PIPE, TUBING, VALVES, FITTINGS or FASTENINGS

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Speed, time and trouble is only one of the advantages of doing business with Chicago Steel Service. No matter what you need in stainless pipe, tubing, valves, fittings or fastenings, you can count on quick service from this one source of supply.

Chances are, your order can be filled from our complete warehouse stocks. Should your needs be out of the ordinary and require a mill shipment, Chicago Steel Service can take care of that, too!

In either case, you will receive the close personal attention that has become traditional at the House of Stainless.

While we are known as the House of Stainless, don't forget that we carry complete stocks of carbon steel items with the same comprehensive warehouse service.

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Republic Launches Project

$10 million will be spent to expand facilities in Valley, Canton, Cleveland and Gary

REPUBLIC STEEL CORP., Cleveland, will spend nearly $10 million for expansion and improvements of its plants and equipment. Appropriations for this program were approved recently by company directors, says C. M. White, president. This is the largest appropriation made by Republic since the steel industry production rate began to drop nearly a year ago.

Largest part of the funds will be spent in Ohio's Mahoning valley with more than $5 million scheduled for new equipment in the company's plants in Warren and Youngstown.

Included in the various projects is continuous hot-dip galvanizing equipment in Warren, signaling an important addition to Republic's diversified production facilities.

In Youngstown, a substantial amount will go for a hydraulic pipe expander to produce electric weld pipe for higher pressure lines.

Also included in the program are a new building and equipment at Union Drawn Steel Division's plant in Gary, Ind.; new hot-rolled strip coiling equipment in the Cleveland district; a new building and equipment at Culvert Division's plant in Canton, O.

Expresses Optimism — In announcing the appropriations, Mr. White said: "Although the first six months of this year showed a sharp drop in steel production compared with 1953, we feel optimistic about the future of the steel business. Republic has shown that good earnings can be maintained with operations around 70 per cent of capacity."

Hot-dip galvanizing equipment for the Warren mill will be installed in the present sheet and tin building and will increase the plant's finishing facilities by 9000 tons a month. Work will commence immediately. The continuous strip galvanizing line, which will process cold-rolled steel up to 48 in. wide, is being designed and built by Wean Engineering Co., Warren, O.

Coils of steel up to 40,000 lb in weight with a maximum thickness of 16 gage, will be continuously coated with zinc at a rate of about 300 fpm. Length of the entire line will be about 600 ft. The line will permit processing of a wide range of tempered steels, since the coils will be annealed and temper-rolled before entering the galvanizing line.

Pipe Expander — The hydraulic pipe expander to be installed in Youngstown will produce electric weld line pipe with improved physical properties to meet the need for higher pressure oil and gas lines now being more widely used throughout the country. The equipment will cold-expand and test 8⅝-in. to 16-in. line pipe in lengths up to 48 ft.

Other appropriations for the Warren and Youngstown plants include improvements of pickling facilities, roll turning equipment, alterations to an uncoiler, a new strip width gage and a thickness indicator for a cold strip mill.

The new building in Gary will house production facilities for an additional 1500 tons of carbon and alloy cold-drawn bars and 600 tons of alloy cold-heading wire per month to meet increased demands of midwestern customers.

The nation-wide boom in superhighway and turnpike construction makes expansion of Republic's Culvert Division in Canton desirable. The new building will contain facilities for fabricating an additional 5000 tons per month of sectional plate structures for highway drainage purposes.

Bridgeport Expands Tube Mill

Bridgeport Brass Co.'s $5-million tube mill is ready to start operations at Bridgeport, Conn. The new facilities will enable the drawing of five tubes simultaneously, rather than one tube that was possible in its old Housatonic mill which will be converted to other uses. "Production will be greatly increased and the amount of scrap considerably reduced," says Herman W. Steinkraus, president.

The mill is outfitted with 11 draw benches which can stretch a short heavy tube as long as 130 ft, five annealing furnaces and seven overhead cranes.

Bridgeport Brass specializes in such products as pipe fittings, telephone wires, shell casings, tubing, sheeting and stripping.

Valve Polices Power Line

This 2500-pound pressure sealed-gate valve is one of three in use on superheater outlets atop a power station in Reading, Pa. These self-tightening valves, which are exposed to temperatures of over 1000°F, were developed by American Chain & Cable Co.'s R-P&C Valve Division, Reading. Nine layers of aluminum alloy sheets insulate piping throughout the $35-million plant

Link-Belt Enlarges Facilities

Link-Belt Co., Chicago, manufacturer of conveying, processing and power transmission equipment, recently expanded its West Coast facilities by building an addition to its San Francisco plant. The new space houses increased manufacturing, engineering and warehousing facilities and a factory branch store.

Foundry Ships Fiber Pipe

Central Foundry Co., Holt, Ala., large manufacturer of cast iron pipe and fittings, shipped the first tonnage of fiber pipe from its new plant there.

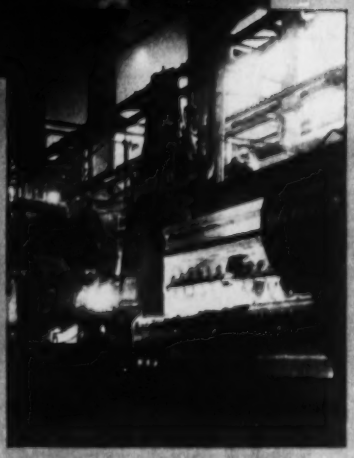
American Can Expands Plant

American Can Co., New York, is constructing a new warehouse and shipping station which will occupy more than 85,000 sq ft of floor space at its St. Louis plant. The plant, under management of V. J. Verhunce, has an annual

18 ERIE STEAM HAMMERS . . .

1.

2.



3.

at Canton Forge Plant of Ford Motor Company

1. This 2500 pound Erie Steam Hammer produces 360 forged components per hour for the Ford front suspension.
2. Forging light truck spindles 3¼ inch stock at the rate of 75 to 90 pieces per hour is the job of this 4000 pound Erie Steam Hammer.
3. This battery of Erie Steam Hammers is kept busy on Forgings for Ford automobiles at the Canton Forge Plant.

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Dependable **FORGING HAMMERS • HYDRAULIC PRESSES**

rated capacity of more than 1 billion cans.

Ford Expands Stamping Plants

Ford Motor Co., Dearborn, Mich., will build additions to its stamping plants in Cleveland and Buffalo. An addition of 300,000 sq ft of floor area to the Cleveland plant, now under construction in Walton Hills, O., will increase manufacturing space in that building to 1,260,000 sq ft. The addition to the Buffalo plant will contain 80,000 sq ft. Most of the added area in the latter plant will be devoted to tool and die room facilities to serve the 21 major press lines now operating there. Both plants will produce steel body parts and finished subassemblies.

Six major press lines will be added to the 16 lines originally planned for the Cleveland stamping plant which is expected to start operations late this year; full operations are scheduled for early 1955.

Chase Brass Plans Expansion

Chase Brass & Copper Co. Inc., Waterbury, Conn., will spend about $5 million to expand and further modernize its sheet production facilities in its E. 260th street plant, Euclid, O. Present planning does not call for additions to the building, which was constructed in 1941. The new project follows the company's recent announcement that it would spend $4 million in enlarging its other plant in Euclid, on Babbitt road, to increase its capacity for the production of copper and copper-alloy tube.

GE Opens Pittsfield Foundry

General Electric Co.'s Chemical Materials Department, Pittsfield, Mass., established an experimental shell-molding foundry, with complete facilities for making shell molds and pouring castings. S. L. Brous, general manager of the department, says, "This facility will enable GE to make a contribution to foundry technology in solving problems such as satisfactory castings of low-carbon steel in shell molds." He added that this foundry also will permit constant testing and improvement of the firm's phenolic resin for the shell molding process, as well as provide trouble shooting service for foundry customers.

General Electric also announced the formation of a Chemical & Metallurgical Division, including the former Chemical Division and the Carboloy Department. Robert L. Gibson, general manager of the new division, will make his headquarters in Pittsfield. The division's five operating departments will remain unaffected. Kenneth R. Beardslee retains his post as general manager of the Carboloy Department, Detroit. Headquarters of the Chemical Materials and Plastics departments are at Pittsfield; Silicone Products, at Waterford, N. Y.; Laminated & Insulating Products, at Coshocton, O.

Hastings To Make Awnings

Hastings Aluminum Mfg. Corp., Sparrows Point, Md., is equipping 5000 sq ft in a building on North Point road, for the manufacture of aluminum awnings. Hitherto, this company, as the Hastings Aluminum Awning Co., Baltimore., has served as a local distributor for this product, which it will now produce in its entirety.

Turbine Blade Research

An engineer of General Motors' transmission development group uses high-velocity water flowing through a plastic nozzle to study effects of turbine blade shapes and settings for possible uses in automobile torque converters and automatic transmissions

Stanley To Sell Mill

Firm plans to consolidate cold strip output in New Britain after sale of Bridgeport hot mill

PLANS are being formulated by Stanley Works, New Britain, Conn., for its Bridgeport, Conn., facilities.

Tentatively, the program calls for an addition to the present open-hearth capacity of two electric furnaces to melt alloy steel and installation of a hot bar mill to roll low-carbon and alloy bars. These facilities would be made at the Seaview avenue plant where hot-roll strip operations will be continued.

Will Sell Hot Mill—The program also includes the organization of a successor company by outside capital to acquire the Seaview avenue plant and carry out the proposed expansion in facilities.

The Howard avenue cold mill, also in Bridgeport, will continue in operation until a final decision is reached on plans for the hot mill. Action may be delayed for several months, but eventually the cold mill will be closed and all cold strip production will be centered at New Britain, where facilities have been provided over the years for production of narrow cold strip, starting with hot strip in wide widths.

Objective—Commenting on the future of the company, John C. Cairns, president, says that "the primary purpose of the Stanley Works must continue to be the rolling of steel and the expansion of our major activities in the manufacture of hardware and tools."

Current planning, involving engineering, financial and marketing studies, is being carried on by Ebasco Services Inc., New York. This planning was begun several years ago by Stanley with the assistance of outside engineering firms. The company found that it could not continue to produce narrow-width hot strip and subseqently cold roll it in narrow widths and remain competitive. The main reason has been the development of hot and cold rolling of strip steel in wide widths and large tonnages by many mills at lower costs than the company was able to achieve on its narrow strip mill with 12-in. maximum width.

In 1926, when Stanley purchased the Bridgeport mill, there was only

one wide hot-strip mill with an annual capacity of 500,000 tons in the country. By 1951, 29 such mills, each with an average capacity of more than 1 million tons, were in operation, says Mr. Cairns.

A plan to convert the hot mill to wide strip had to be abondoned, not only because of the many millions of dollars that would have to be expended, but, even more important, because of the lack of a market in the area to take the large tonnage which a single wide hot strip mill would produce.

Square D Building Plant

Square D Co., Detroit, is building a heavy electrical equipment manufacturing plant in Royal Oak, Mich. Occupancy is planned for early next year. Initial construction at Royal Oak, to provide 60,000 sq ft of floor space, will involve an investment of about $750,000 and is the first phase of an extensive expansion program, says F. W. Magin, president. Square D has expended capital funds in excess of $10 million since the end of World War II to triple production facilities.

VACATIONS

Willys Motors Inc., Toledo, will close Aug. 2 to Aug. 16 for a plant-wide vacation. Only shipping, receiving and certain other offices will be open during the period.

REPRESENTATIVES

Williams Steel & Supply Co., Milwaukee, appointed as its representatives: Robert Slack, Des Moines, Iowa; Lon E. Jacobson, Minneapolis; Clarence Fry, St. Paul.

Micrometrical Mfg. Co., Ann Arbor, Mich., manufacturer of shop equipment for measuring surface roughness, appointed as its representatives: Overgard Machine Tool Co., Denver; Mine & Smelter Supply Co., Salt Lake City, Utah; Quality Control Co., Los Angeles; Darling Abrasive & Tool Co., San Francisco; Portland Machinery Co., Portland, Oreg.; H. F. Soderling Co., Seattle; Williams & Wilson Ltd. with offices in Windsor and Toronto, Ont., and Quebec and Montreal, Que.

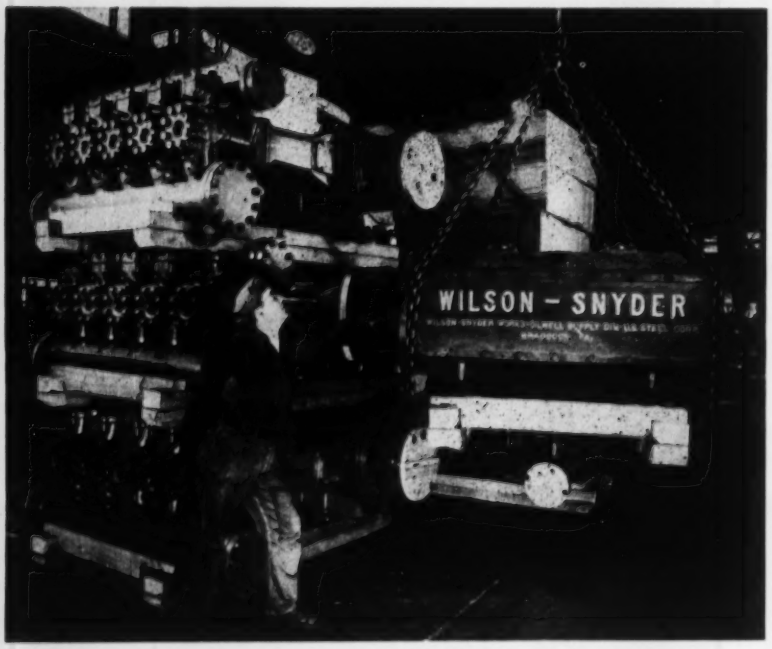
Bristol Brass Corp., Bristol, Conn., appointed Brace-Mueller-Huntley Inc., Syracuse, to distribute its products in New York, northern Pennsylvania and western New England. Bristol Brass rod, strip, wire and shapes will be stocked at the distributor's warehouses at Buffalo, Albany, Syracuse and Rochester, N. Y.

Mar-Rail Conveyor Co., Pawtucket, R. I., manufacturer of conveyors, appointed the following dealers: Holmes-Talcott Co., Hartford, Conn.; Stillwell Equipment Corp., Elmsford, N. Y.; Equipment Sales Co., Phoenix, Ariz.; Arnold Co., Bridgeport, Conn.; Sim Grady Machinery Co., Macon, Ga.; W. J. Motsett Inc., Peoria, Ill.; Equipment Inc., Jackson, Miss.; Clearview Equipment Co., St. Louis; MacDougall Equipment Co. Inc., Binghamton, N. Y.; Fox Equipment Co., Buffalo; Herd Equipment Co., Oklahoma City, Okla.; McCarthy, Jones & Woodward, Nashville, Tenn.; Roy Klossner Co., San Antonio, Tex.; Hulse Machinery Co. Inc., Seattle; Dietrich-Collins Equipment Ltd., Vancouver, B. C.

Parker Appliance Co., Cleveland, appointed Avels Sales & Engineering Co., Indianapolis, as a distributor of its Hoze-lok fittings and hose assemblies. Parker also promoted D. N. Allensworth, formerly sales engineer in Seattle, to manager of the Indiana district with headquarters in Indianapolis.

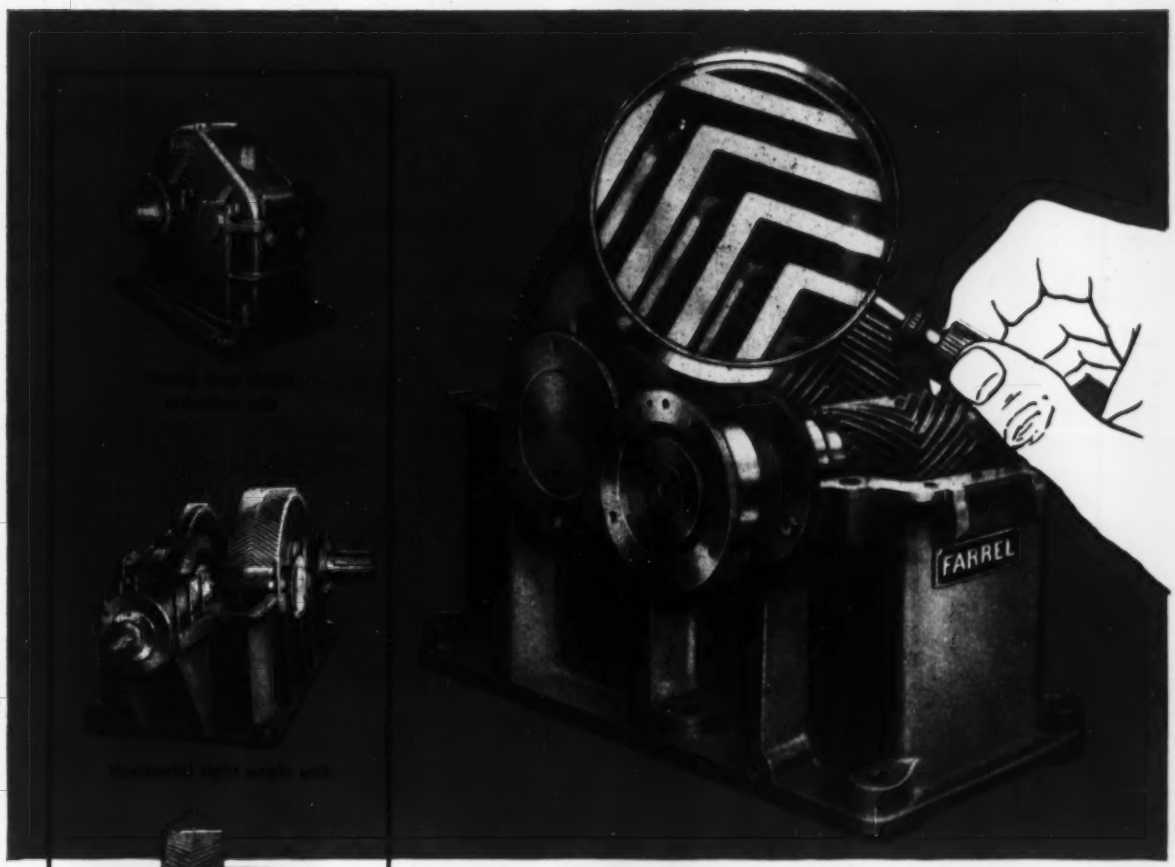
Merit Products Inc., Culver City, Calif., appointed as sales representatives for its contour sanders and flexible grinding wheels: Norman Dahley, Chicago; Herren-Sims Co., Cleveland; W. J. Holtmeier Co., New York.

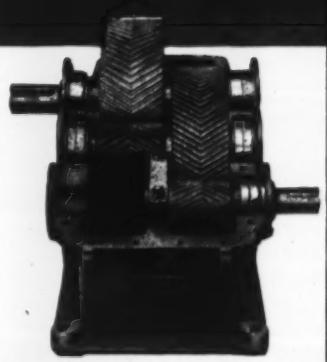
Morse Chain Co., Detroit, appointed as its distributors: Manufacturers Equipment & Supply Co., Flint, Mich.; Schuman Steel Products Co., Bellingham, Wash.; and Jack Lee Machine & Supply Co., Attalla, Ala. Morse Chain Co., a subsidiary of Borg-Warner Corp.,



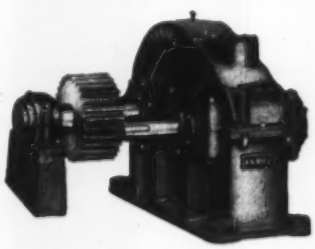
U. S. Steel Division Ships Jet Fuel Pump

At a signal from E. J. Janeck, the first of eight Alaska-bound pipeline pumps moves out of Wilson Snyder Works of U. S. Steel Corp.'s Oil Well Supply Division in Braddock, Pa. They will pump gasoline and diesel oil in a pipeline under construction between Haines, Alaska, and Fairbanks, Alaska, Air Force Base





Standard double reduction unit



Unit with pinion on extended shaft supported by outboard bearing

Close-up of a way of life for Speed Reducers

Long, trouble-free speed reducer life is vitally dependent on precision generation of the gears.

The gears of Farrel® speed reducers are made by the famous Farrel-Sykes method — a process that assures accuracy of tooth spacing, profile and helix angle. The herringbone design provides evenly distributed pressure over each tooth, from tip to working depth line. This means that there is no tendency for the teeth to wear unevenly and thus shorten the life of the gears.

Shafts and bearings are factored to safeguard against interruption of vital processes. Gear cases are proportioned to withstand repeated heavy peak loads. Joints are sealed to prevent entrance of dirt.

Farrel speed reducers are made in a number of types, with a wide range of ratios and capacities. Designs include single, double and multiple reduction units, speed change units having two or more selective speeds, right angle drives, and drives to meet special requirements.

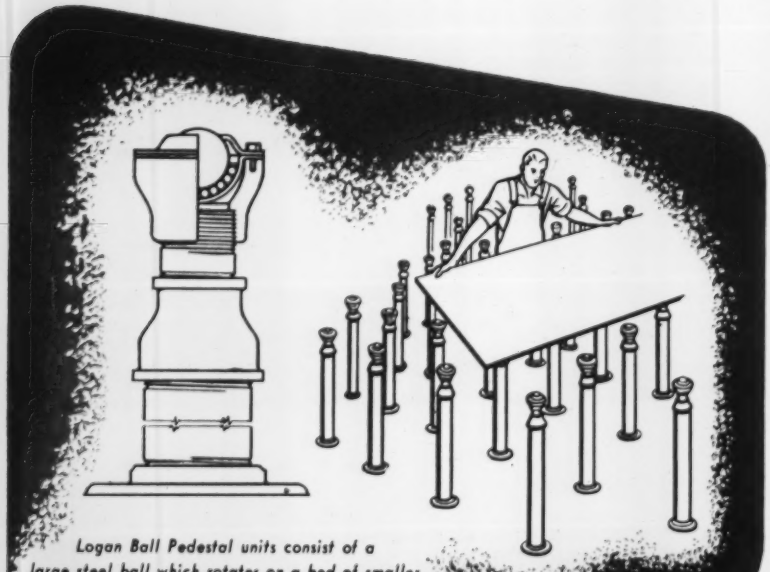
Wherever power transmission must be smooth, quiet, and vibrationless under all conditions of load and speed, *specify Farrel speed reducers.* For further details, send for a copy of bulletin 449.

FARREL-BIRMINGHAM COMPANY, INC., ANSONIA, CONN.

Plants: Ansonia and Derby, Conn., Buffalo, N. Y.
Sales Offices: Ansonia, Buffalo, New York, Boston, Akron, Detroit, Chicago, Memphis, Minneapolis, Portland (Oregon), Los Angeles, Salt Lake City, Tulsa, Houston, New Orleans

FB-840

Farrel-Birmingham®

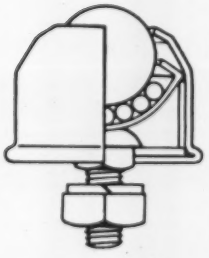


Logan Ball Pedestal units consist of a large steel ball which rotates on a bed of smaller balls contained in a hardened steel cup with semi steel housing.

BALL PEDESTAL

Logan Ball Pedestals are particularly adapted to handling sheets or plates around shears and punch presses or other machines. The ball units permit turning or moving the plates in any direction and the pedestal construction provides a means of conveying without blocking the working area.

Logan offers Ball Pedestal units in several sizes. Further information on request.



Ball Transfer units also available for table mounting.

Logan Conveyors

LOGAN CO., 535 CAREL ST., LOUISVILLE, KY.

Chicago, makes mechanical power transmission equipment.

NEW ADDRESSES

Research Institute of America Inc. opened its new headquarters in the Research Institute Bldg., 589 Fifth Ave., New York 17. Dr. Henry Bund is the executive editor.

Trane Co., LaCrosse, Wis., manufacturer of air conditioning, heating, ventilating and heat-transfer equipment, moved the Charlotte, N. C., suboffice of its Greensboro, N. C., sales office to 116½ Church St., Charlotte; the Nashville, Tenn., suboffice of the Louisville sales office to 1810 Broad St., Nashville.

Cleveland Automatic Machine Co., Cincinnati, moved its Chicago district office to 6429 North in Oak Park, Ill.

ASSOCIATIONS

James W. Hosler, manager of merchandise department of American Blower Corp., Detroit, was elected vice president of **Industrial Unit Heater Association**, that city. President of the association is Irving W. Clark.

Elmer R. Kaiser, Columbus, O., was appointed director of research for **American Society of Heating & Ventilating Engineers**, New York. Louis N. Hunter is president. Mr. Kaiser will assume his duties about Sept. 1.

Dr. Ralph A. Schaefer, vice president of Clevite-Brush Development Co., a subsidiary of Clevite Corp., Cleveland, was elected president of **American Electroplaters' Society**, Newark, N. J. Other officers are: First vice president, Clyde Kelly of American Plating Co., Des Moines, Iowa; second vice president, Dr. Samuel Heiman of Philadelphia Rustproof Co., Philadelphia; third vice president, Francis T. Eddy of Chase Brass & Copper Co., Waterbury, Conn. P. Kovatis is executive secretary.

"We've got an economy drive going..."

"Wow! Am I glad to get off my feet. Those cement floors at the exhibit hall were killing me!"

"Glad to have you stop by. Let's just relax for awhile."

"While we're sitting here, Roy, tell me something. I heard you talking about cutting costs with that fellow from the automobile plant. We've got an economy drive going and I'd like some more ammunition. For example: Wolverine Trufin*—why is that so economical?"

"Trufin is a natural for cutting costs. One-piece construction gives you more heat transfer area in less space. Retubing with Trufin saves the cost of new equipment, boosts output."

"It sounds better all the time, Roy. Keep going."

"Well, we've got the Wolverine Spun End Process†. We take a length of plain tube and, in one simple operation, fabricate it into the shape you need. Spinning can eliminate such operations as deep drawing, swaging, machining and assembly."

"That can save us plenty of time."

"Sure, Bill. You're an engineer—you've got to look at it that way. And you, Jim,—you're a P.A. You've got to consider convenience. You'll be interested in knowing that Wolverine produces tubing of copper (and its alloys), aluminum, and electric-welded steel—prime surface or finned. Then, too, we can give you production-line packaging—safe delivery, easy to handle, easy to store shipments. Remember too, Bill, that you can get technical help from our Field Engineering Service!"

DON'T FORGET: Only Tubemanship can produce such a sparkling economy story as this. You can get full information from our General Products Catalog. Just write. WOLVERINE TUBE, Division of Calumet & Hecla, Inc., 1475 Central Avenue, Detroit 9, Michigan.

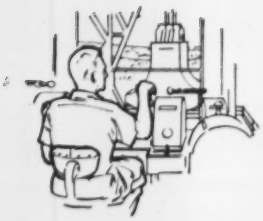
Wolverine Trufin and the Wolverine Spun End Process available in Canada through the Unifin Tube Co., London, Ontario.

† A PATENTED PROCESS RE. 22465
* REGISTERED U.S. PATENT OFFICE

EST. 1916

WOLVERINE TUBE
DIVISION OF CALUMET & HECLA, INC.
Manufacturers of Quality-Controlled Tubing

PLANTS IN DETROIT, MICHIGAN, AND DECATUR, ALABAMA. SALES OFFICES IN PRINCIPAL CITIES.
EXPORT DEPARTMENT, 11 EAST 40TH STREET, NEW YORK 16, NEW YORK



Look at the record!

15-Ton unloaders with EC&M control set new records in unloading time and low maintenance costs at the Baltimore & Ohio, Curtis Bay Ore Pier

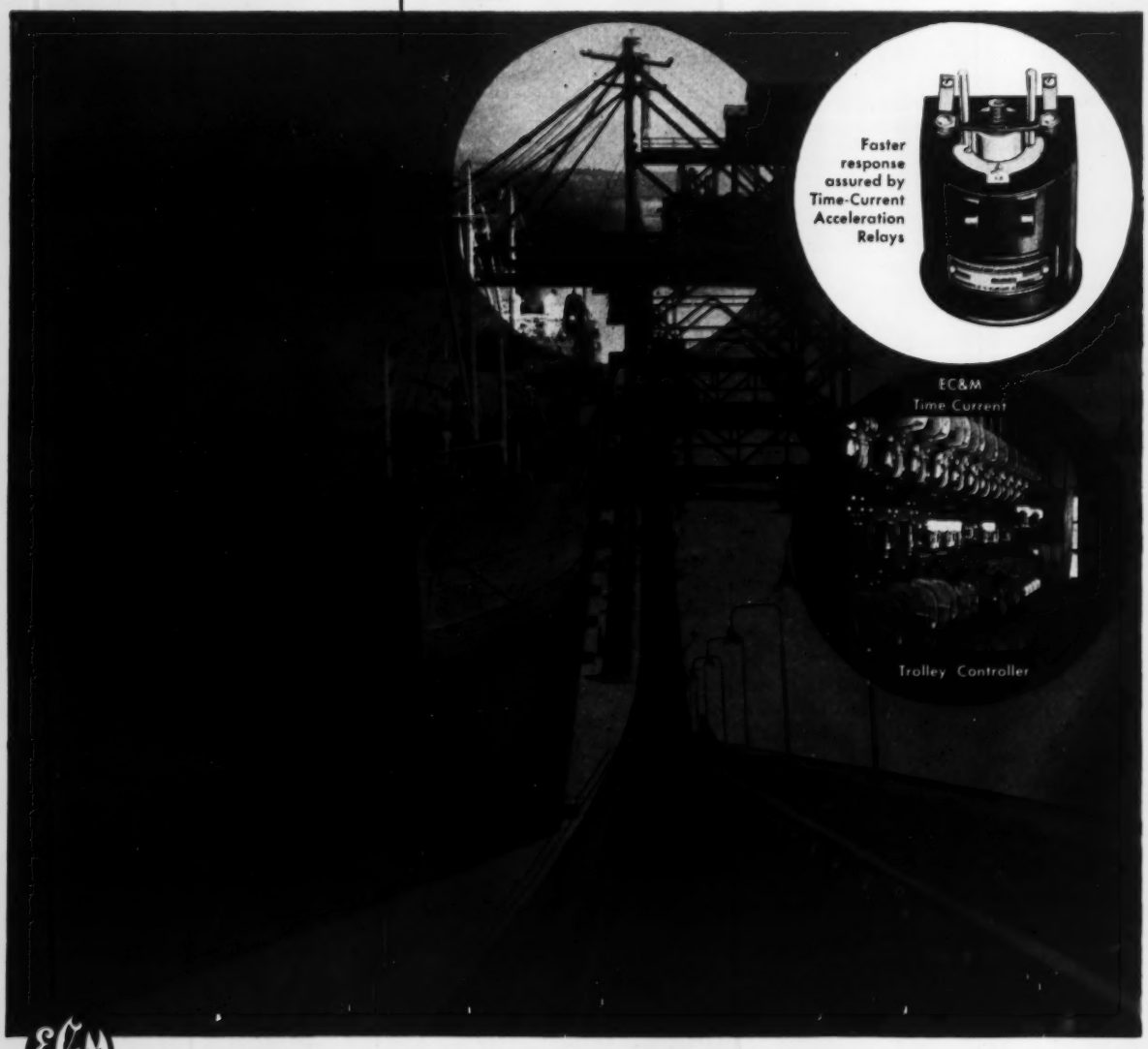
20,560 TONS OF IRON ORE UNLOADED IN 13 HOURS AND 55 MINUTES! Fast-operating EC&M Line-Arc Contactor Control with EC&M Time-Current Acceleration helped establish this record.

EC&M Control Apparatus and Control Engineering also provide outstanding safety during all operations. Power for motor drives is fed through operator's cab for safe, direct control. Dynamic braking for quick trolley stop is automatically applied in end-zones and if power fails. EC&M Quadruplex Controllers insure that the 4 bridge motors share the load equally and that brakes release and set uniformly.

Replacement part cost, in this installation, has been only 25¢ per 1000-tons of ore unloaded over a 3 year period. The record proves that high output with low upkeep is yours when you select EC&M Control.

3061

Write today for Bulletin 921-OU



THE ELECTRIC CONTROLLER & MFG. CO. 2698 E. 79th Street • Cleveland 4, Ohio

Technical Outlook

SUPER SNOOPER—First practical x-ray microscope that can be produced in quantity was described at the recent meeting of the International Council of Scientific Unions convened in London, England. General Electric describes their development thus: X-ray source is 0.00001-inch in diameter instead of ⅛-inch in smallest conventional unit. Electrons are focused through two electrostatic lenses that give an image that is visible to the eye. Metalworking uses: Alloy development, corrosion, welding, bonding quality of paints and adhesives, etc.

FOR TOUGH JOBS—A thermosetting epoxy-phenolic resin (Synthetasine 200) marks a step forward in shipping difficult materials in steel containers. It holds alkalies, detergents, dilute mineral acids, chlorinated solvents and emulsions. Coating takes rough handling and remains flexible even when baked at temperatures outside the recommended 400 to 475° F range. Battelle developed it for the Steel Shipping Container Institute.

LONGER BATTERY LIFE—Improved grid alloys, responsible for increasing battery life from 7 to about 17 years, have been patented by Exide Industrial Division, Electric Storage Battery Co. Patent case histories describe batteries maintained on float, as in such applications as emergency lighting, switchgear control, fire alarm systems and telephone stand-by.

SCALE REMOVAL— Engineers at Boeing are working to simplify the descaling of titanium and stainless after heat treatment. A carbonate precoating material is used with titanium. The new scale, produced by the coating and heat treatment, appears to have a coefficient of expansion different from the metal surface. On cooling, a portion of it cracks and can be removed by gentle rubbing. Remaining scale is removed by a brief pickle in a modified nitric-hydrofluoric pickling solution. Stainless is precoated with a silicon-bearing substance that decomposes in the furnace and deposits a coating of finely-divided silica. The barrier of silica, which can be rinsed or brushed off after heat treatment, inhibits oxidation. Scale is pickled off in two to four minutes in a molten salt bath.

TITANIUM SHEET— Rem-Cru says their new weldable high strength titanium alloy, A-110-T, is now available in sheet. Thickness goes down to 0.025-inch. Minimum tensile strength is 115,000 psi, and ductility of fusion welded joints is good. A-110-T holds on to its strength well at elevated temperatures.

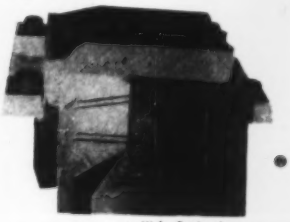
STANDS UP— An investment cast wheel of Haynes alloy No. 31 is the heart of a new supercharger for diesel engines operating at 1450° F and 42 000 rpm. Technique made it possible to use thin efficient vanes designed for uniform minimum stresses. Vanes are only 0.040 inch thick—too thin to produce by other methods without a prohibitive amount of machining on the high temperature alloy.

PACKAGING— Granular and powdery materials are being shipped in 500 and 2500-gallon synthetic rubber and fabric containers—after unloading, they are collapsed and returned. The large container is 8 feet in diameter by 8 feet tall; the smaller, 3 feet, 10 inches in diameter by 7 feet tall. Materials such as polyethylene and polyvinyl chloride are being shipped regularly in them. Tests are running on carbon black, starch, flour, sugar, malt, granular reclaim rubber and many corrosive and hygroscopic materials. It's a U. S. Rubber development.

Metalworking Outlook—p.39 *Market Outlook—115*

Laminated epoxy Hydroform die

Ren-ite Plastics Inc.



Kish Resin Inc.

Forming die with metal inserts

This is a plastic die shop. Men in foreground are laying up glass cloth on a plaster mold. Others are mixing chemicals, making weldments and preparing surfaces. Inset shows epoxy draw die and part formed with it

PLASTIC DIES— Newcomer Makes

Material is cast or molded to desired shape. Time for toolup is shortened because much machining is bypassed. Dies can be used for development work, prototypes, short runs

THE PLASTIC DIE industry is in the dubious position of a refrigerator salesman at the North Pole. The prospective customer is interested, but he can't figure out how what is being offered can be any better than what he already has.

Naturally, plastic die people are waging a vigorous missionary campaign. Although over 5 million pounds of the three die materials (phenolics, polyesters and epoxies) will be sold this year, only a dribble is finding its way into commercial tool and die and stamping shops. In fact, a trade association for the industry has no record of members using the material. Consumption is largely confined to the captive shops of those inveterate pioneers, the auto and aircraft industries.

So, like missionaries, 99 out of 100 plastic die representatives are shelving the natural instincts of salesmanship and are putting the cards right on the table. They'll tell you frankly that plastics don't have the strength, hardness or wear resistance of steel; that a die can be put out of commission with a double blank or husky hammer blow; that they aren't selling a high-production product.

But—"We can do business," they'll point out: "1. If you want a material that is easy to work with for the purpose of getting quick engineering information for a metal die. 2. If you want a fast, inexpensive toolup for a die that'll form a dozen or so prototype parts, or 3. If you want a fast, inexpensive toolup for a short-run die that will form anywhere from 250 to 50,000 parts."

That's about the gist of the case. They fill a need for die development work, prototypes and limited production. They are not suited for high-speed, high-production operations, like progressive die or transfer press work.

Survey — STEEL talked to several suppliers and users in the Detroit area, asking these questions:

"Say I have a stamping shop with the experience and facilities to turn out metal dies. I'm producing ash trays, complicated panels for refrigerators and electric stoves, accessory parts and simple toys. Where do you recommend plastics? What operations can I handle? What materials? Gages? How do I train my die men? What will be the outlay for new equipment? How long will it take me to get into production?"

Proper Focus—A supplier estimates users of plastic tools (including jigs, fixtures, dies, etc.) will save about $30 million this year, but, it must be pointed out,

Marblette Corp.

Stretch form die in use

Creative Industries of Detroit

Example of a metal weldment

All-plastic drop hammer die

Phenolic experimental die

Warren Plastics & Engineering Co.

Bid for Second Team

By HARRY CHANDLER
Associate Editor

savings won't come from material costs. Phenolics run about 50c a pound, polyesters about 35c, epoxies from 60c to $1.50. And that's not all. Depending upon your die-making technique, you'll also be out of pocket for such items as glass cloth laminates, metal fillers, weldments, etc.

Savings are on the production end. You can cast or mold complicated shapes in plastics. Toolup time is shortened and much tedious, expensive machining, such as kellering, is bypassed.

So—What about the example—ash trays, complicated refrigerator and electric stove panels, simple toys? A big job shop tackles all jobs this way: If the part is flat or round and the die can be ground, sawed or filed, forget plastics. Consider them if the part has a lot of contour and kellering surfaces.

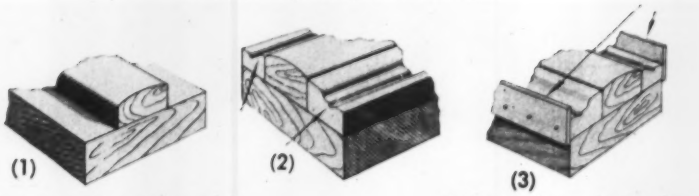
Obviously, ash trays and simple toys (relatively easy toolup, high-production items) are eliminated, leaving the panels and accessory parts as likely candidates. Toolup for the former is in the slow and expensive category. Accessories, such as a tire well for a sports car, have been held back because they are luxury items. Toolup for the tire well in metal would run about $170,000, considerably less in plastic.

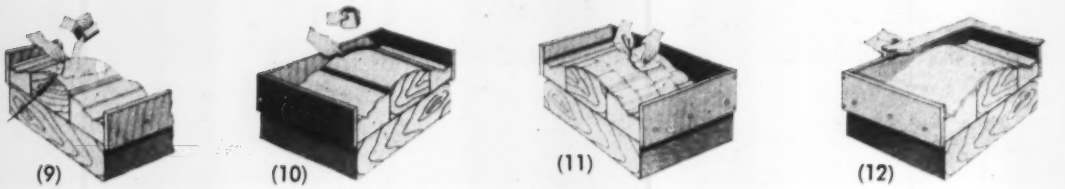
Savings in time and material hinge largely on know-how. An experienced shop cast a cab-over-engine die in 30 days. In steel, the same job takes four to five months. Dollar savings were over 50 per cent. When asked about comparative costs, most suppliers prefer to say: "If materials are used with good common sense, substantial savings can result."

Operations — As stated, high-speed, high - production work hasn't arrived. Also add most blanking, piercing, trimming and hot-forming operations. One supplier, for example, has a blanking die that will handle 20-gage aluminum, but, by and large, such work is still in development. He, and other suppliers and users interviewed, mention drawing and forming first. General approval also is given to Hydroform, rubber pad, drop hammer and stretch form dies.

Materials—The softer they are, the better. A big user names these limits for limited production work: Cold-rolled carbon steel, 0.040 inch; stainless about ½ that thickness; and aluminum about twice the thickness of the carbon steel. Of course, extremes are reported, including the forming of a few prototype parts from 10-gage carbon steel. The consensus

How To Make a Plastic Die





insists on a conservative 16-gage top limit for carbon steel and a somewhat lower goal for stainless.

Training—Here it's easy to fall into a trap, reasoning: "If I can bypass some machine shop work, I can get by with cheaper help." It's a yes-and-no proposition. Plastic die makers work in groups. The leader must be a skilled tool and die man. His helpers can be of the semi-skilled class, but even there, the more they know, the better off you are.

There are no books on the subject; so training is largely by word of mouth. Most suppliers will take your group leader into his shop, train him for two or three months, then send him home with instructions to teach others. Progress in your shop is checked by followup visits by the supplier. Some suppliers prefer to do their training in your shop.

It's possible that unions are casting an eye in this direction. One supplier thinks they'd want an apprenticeship period of two years.

Equipment—Needs here depend a great deal on what you have now. Some claim if you have facilities to make metal dies, nothing more is needed. Others point out that most shops will find themselves spending $1000 to $2000 for scales, mixers, spray guns, etc. Catalysts alone will cure out a die, but an oven (costing from $5000 to $12,000) will give you full advantage of the speed factor. Extra space may be needed for storage, and there are those who build new shops because cleanliness is vital. A company that uses vacuum molding equipment thinks an additional 5 per cent investment in your die shop is realistic.

Materials—Here we have wide differences of opinion. There's general agreement that no material, phenolic, polyester or epoxy, is the last word; and, many add, if plastic dies are to go places, improvements must come in materials. You'll also find a user tends to be absolutely sold on the material he has had the most experience with.

Each material has its advantages and disadvantages, but it should be understood that phenolics, polyesters, epoxies alone or in combination can be and are used widely for die development work, prototypes and limited production.

Phenolics, the oldest material on the market, tend to become brittle in production. Users get around this by containing dies in steel weldments and locating metal inserts in critical wear areas (metal inserts, by the way, do not create a dissimilar metal problem because of the resiliency of plastic).

Polyesters have about a 7 per cent shrinkage factor in die fabrication, which is overcome by molding dies in special presses or under vacuum.

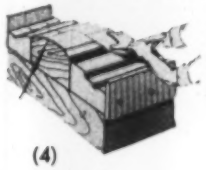
Heat resistance is the limitation on epoxies, the newest material. The problem is inherent in all plastic dies because they do not conduct heat. In one way, this is a help. Retained heat in the part aids the forming operation, but it can also soften die surfaces. Newer epoxies under development are expected to get around this difficulty. Metal fillers, such as aluminum powder, are being used successfully to help conductance.

You'll find that combinations of materials are used. One shop uses an epoxy surface (with a metal filler) and phenolic core. The entire die is contained in a boiler plate weldment. Another big shop uses a polyester surface or shell (it is laminated with fiber glass cloth) and a phenolic core. Weldments aren't used; the die is merely bolted to the metal base plate. Combining all three materials is impossible, since the phenolic takes an acid catalyst. For the same reason, metal fillers can't be used with it.

As stated, if you have the know-how, any of the three materials will do the job. Choice of material seems to be largely a matter of opinion at this stage of the game. You'll probably wind up using the material you started with.

Die-making Techniques — The end purpose here is to get the most out of your material. Basically, all you need is a resin (a syrupy liquid) and a catalyst. Mix them; then pour in a plastic or wood

Sheet wax for metal thickness



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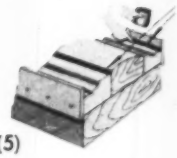
Apply coat of paste wax



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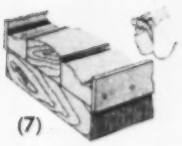
Mix hardener and surface coat



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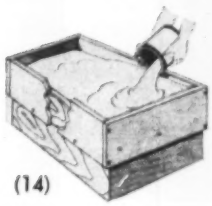
Fillet wax used for radii

Spray with parting compound

Pouring resin into die cavity

The die is completed

(13)



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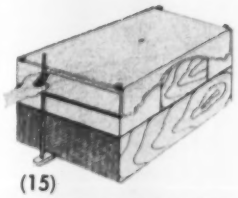

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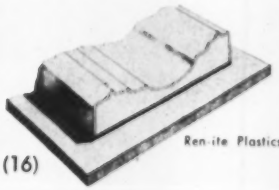


(16)

Mixing the casting resin

Scribing balance line

model. The catalyst can do the curing job. Mating parts are made by building from completed die.

If you're looking for extras, curing time can be shortened by putting your die in a 180°F oven for 5 to 24 hours. Glass cloth laminates, fillers (such as aluminum, graphite or iron dust), metal inserts and boiler-plate weldments may be used to muscle-up physicals.

One popular technique is to build up a glass-laminated surface or skin (see step-by-step drawings, above). After the skin is made, a core or backup, possibly of another material, is poured into it. Skins may be built up by hand, vacuum molded or made in a special press.

Many variations are practiced. One shop casts the core first, then chips it back and applies a skin of another material. Another company recommends metal-plastic composites, resorting to plastic for only the hard-to-machine surfaces. Metal backup is usually cast iron or Kirksite, a zinc-base alloy. Some use metal inserts; others do not. Inserts may be cast when the die is made or they may be installed later—the area in question is chipped away to accommodate the insert; plastic is poured into the cavity, and the insert is placed on this uncured surface. Metal thickness can be accounted for by a coat of wax on the model, or, as one supplier claims, the material is resilient; you don't have to allow for metal thickness.

You'll probably wind up using the technique the supplier taught your group leader.

How Long — Starting from scratch, a metal die shop should be able to start turning out plastic dies for production in from three to six months. Some claim it doesn't take that long, but, of course, in the final analysis, a general statement is impossible here.

Extras—Plastic dies are easy to fabricate, modify and repair.

If you can draw a part with a plastic die, it will draw on a steel die. So you can save on tryout time with a plastic die by incorporating the information you get in plastics into your metal die.

Some start work on plastic and metal dies at the same time. Engineering details worked out in plastic go into the metal die. The plastic, which is finished first, is put into production until the metal die is completed. The plastic is then used as a standby.

Plastic dies often can be repaired right in the press. Generally, a repair job that would take three days to a week in metal can be done in from two hours to overnight in plastic.

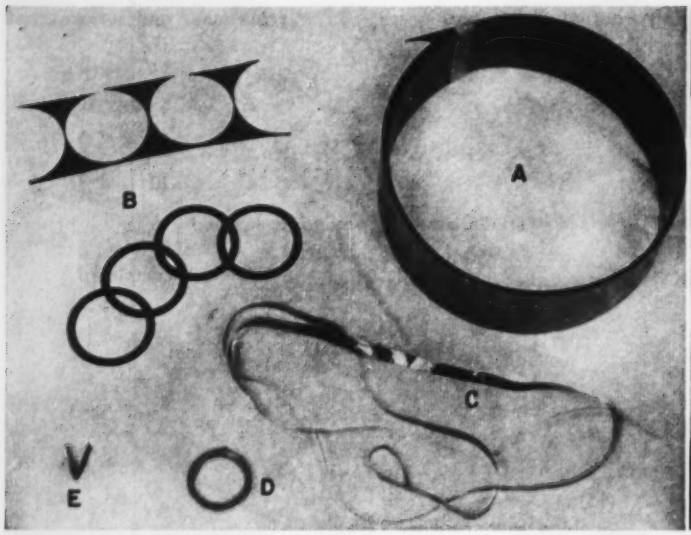
Outlook—Most of the plastic die people are conservative. One big shop, for example, prefers to sell a customer a die at a time rather than a whole line. He reasons that users must learn to live with the new material; and that a wrong impression at the outset may lead him to wrong conclusion.

The consensus is that plastic dies of today are where plastic jigs and fixtures were some four or five years ago.

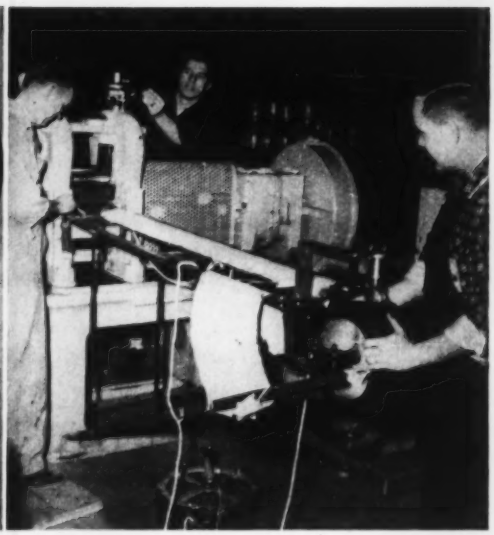
"And if advances of the past five years continue the next ten," an enthusiastic user predicts, "about 75 per cent of all dies in the auto industry now made in steel will be plastic. The remaining 25 per cent will be those jobs that aren't feasible. When you consider that an automaker spends up to $20 million on new tooling every 24 months, you can see how they are being forced in this direction."

What does this optimistic forecast do to the metal picture? Many think metal consumption will grow by leaps and bounds once plastic tooling gains a foothold. A supplier puts it this way: "Plastics are not competing with metals. They will tend to widen the market for the metalworking industry. New opportunities will appear as inexpensive plastic tools demonstrate the practicability of many jobs that would be prohibitively expensive to tackle experimentally with machined metal tools."

This article is based in part on information obtained from Ren-ite Plastics Inc. and Kish Resin Inc., both of Lansing, Mich.; Marblette Corp., Detroit office; Creative Industries of Detroit; Warren Plastics & Engineering Co., Roseville, Mich.; Aries Laboratories Inc., New York; Rezolin Inc., Los Angeles; technical papers given at the fifth annual spring meeting of the Pressed Metal Institute, March 19, Cleveland; and the annual conference of the Society of the Plastics Industry Inc., June 10, Cleveland.



Ductility and workability of this previously unworkable alloy is clearly shown in these various cold rolled items: A) 0.014-inch strip; B) stamped laminations; C) 0.0005-inch tape; D) 0.001-inch tape-wound toroidal coil; E) 0.007-inch V bend



Experimental setup for cold rolling at temperature of 575°C. Flat muffle furnace permits feed of strip directly from the coil, through the heat zone, to the 4-high mill

BIG FUTURE FOR

Non-Strategic Hi-Temperature Alloy

Preliminary oxidation and stress rupture tests prove it equal to or better than known alloys for high temperature use. Other desirable properties broaden its potential

By CARROLL W. LUFCY
Chief, Magnetics Division
U. S. Naval Ordnance Laboratory
Silver Spring, Md.

RECENT announcement of a new heat-resistant alloy, Thermenol, by the Naval Ordnance Laboratory of White Oak, Md., has added a "new look" to the list of heat resistant alloys. Its lack of critical metals coupled with its excellent heat and oxidation resistance, makes it one of the most promising developments in this field.

An alloy of 80.7 per cent iron, 16 per cent aluminum and 3.3 per cent molybdenum, Thermenol, in preliminary high temperature oxidation and stress rupture tests conducted by metallurgists at the Naval Ordnance Laboratory and the Lewis Flight Propulsion Laboratories, NACA, Cleveland, has proved to be equal to or better than some forms of stainless steel for high temperature use.

In addition, its low density, high electrical resistivity, good tensile strength and excellent soft magnetic characteristics give Thermenol a unique combination of properties which make its potential applications almost limitless.

Thin Oxide Layer — Oxidation resistance of Thermenol to temperatures as high as 2300° F is excellent. This is result of a thin tightly adherent film of aluminum oxide which is formed on the exposed surface. By virtue of the high aluminum content, this protection is built into the metal itself, as contrasted to many currently-used processes which involve aluminum coatings.

Its resistance to other corrosive atmospheres and liquids, while excellent in some instances, is not outstanding in others. For exam-

COMPARATIVE STRESS RUPTURE DATA

High Temperature Alloys

Alloy (Balance Composition Fe)	Test Temperature	Stress Psi	Stress-rupture Life (Sheet Values)	Remarks
Thermenol	1100°F	25,000	670 hr	Low density, non-critical (ferritic)
16% Al - 3.5% Mo	1200°F	25,000	47.6 hr	
403 Stainless	1100°F	25,000	20 hr	Jet engine compressor blades (ferritic)
12% Cr.	1200°F	25,000	0	
316 Stainless				Jet engine components (austenitic)
17 Cr, 12 Ni, 2.5 Mo	1200°F	28,000	100 hr	
321 Stainless				Jet engine components (austenitic)
18 Cr, 8 Ni (Ti stabilized)	1200°F	22,000	100 hr	

Thermenol values show promise for use in many jet engine applications where low density and noncritical composition would offer advantages

ple, concentrated nitric aicd solutions at room temperature have practically no effect o.i Thermenol, while a standard 20 per cent salt spray test produces a pitting type of corrosion. Its resistance, therefore, to corrosive environments must be tested for each such condition before any accurate evaluation in this connection can be made.

Decorative Uses—Under normal atmospheric conditions Thermenol shows no evidence of corrosion. Mirror polishes on samples exposed to the atmosphere and handled daily for periods of over a year still retain the original surface appearance. This would indicate its possible use as a stainless steel substitute for many ornamental and decorative purposes.

Its unique combination of properties point to potential applications of a universal nature not possible with other alloys. These range from high grade magnetic items such as transformers, synchros, tape recorder heads, magnetic shields, etc., through its use as a high temperature alloy including jet engine parts and heating elements, to use as an oxidation and corrosion resistant alternate or substitute for many stainless steel applications.

Good Physicals — Tensile tests on Thermenol sheet give values in the range of 82,000 psi, ultimate strength. Present data on impact strength is incomplete but indicates a fairly low, although still useful value. Heating to around 300° C increases the impact strength sharply.

Shearing and forming tests also show a marked improvement when the sheet is heated to between 200 and 350° C, depending upon its fabrication history. Thermenol can be machined satisfactorily at room temperature, a slow tool speed with ample coolant giving best results. It can be arc or spot welded with no difficulty. No qualitative fatigue data are available at present.

Strength-Weight Ratio — The relatively low density of 6.58 gm per cc for Thermenol, about 20 per cent less than ordinary stainless steels, makes for a high strength/weight ratio. This offers obvious advantages, especially to the aircraft industry. In either the cold rolled or re-crystallized state the alloy has a hardness of between 25 and 30, Rockwell C scale. Tests made on experimental tape recording heads show that this hardness imparts excellent wear resistance.

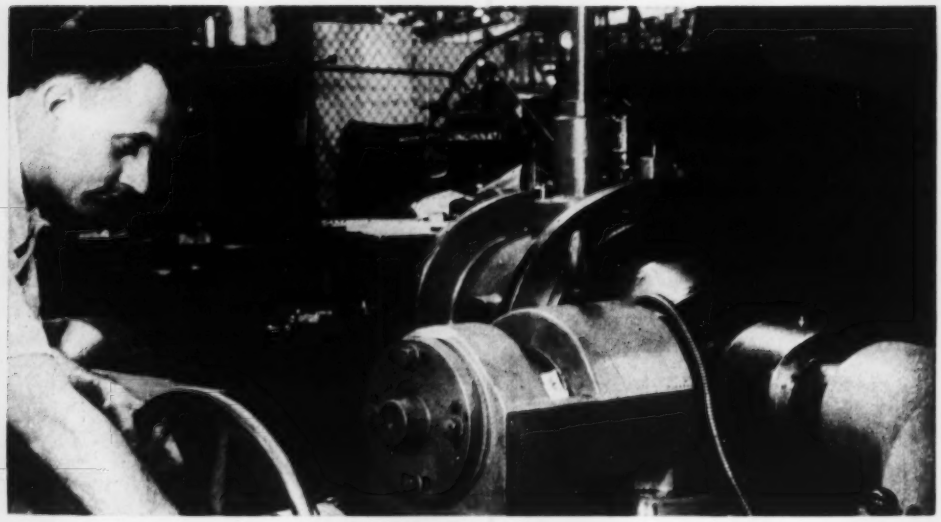
Combination of heat and oxidation resistance with exceptionally high electrical resistivity of 160 micro-ohm cm (50 per cent higher than nickel-chromium alloys) immediately suggests the use of Thermenol as an electric heater element material. Such elements have been fabricated at NOL and successfully operated for extended periods of time without evidence of failure.

Go Slow—A full evaluation of any new alloy requires a tremendous amount of data. Until all such data are available any comparison of the material with another must be made with caution. Thermenol is such a new material.

The fact that many properties which heretofore were obtained by the use of critical and scarce metals are now possible using readily available and easy to obtain metals stands heavily in its favor.

It is certain that only through its acceptance and use by industry will Thermenol find its rightful place in the family of alloys. To this end the Naval Ordnance Laboratory is making its finding available to industry as an aid to better and cheaper military and industrial power.

Jet Parts Flow Into Shape



Pratt & Whitney Aircraft is saving both time and material in jet engine production. One reason is this technique of cold flowing metal into the desired shape

A REAR compressor bearing support is produced from a forged disc weighing 27 pounds. Rough machining takes just over one hour to trim off 13 pounds of excess material. Flow turning of the part takes 5 minutes.

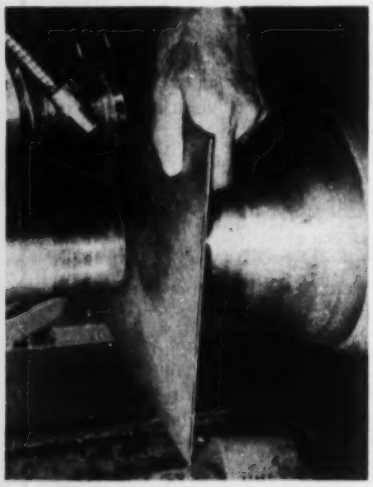
The method used prior to the introduction of flow turning started with a 50-pound forging. Some 4 hours and 20 machining operations later the finished piece came out weighing 14 pounds. Considering the 36 pounds of scrap metal, setup time, wear on cutting tools and labor costs, it was an expensive proposition.

Better Job—Experience on this job is typical of the 10 or so different parts that have been put to flow turning at Pratt & Whitney Aircraft Division, United Aircraft Corp., East Hartford, Conn.

Engineers at P & WA are quick to point out that flow-turned parts also have greater tensile strength and, even after stress-relieving, they are considerably stronger than the machined counterpart.

Much of the development on flow turning (cold-flowing of metal to a shape over a mandrel) was done at P & WA under the direction of Arthur A. Merry, chief of advanced tool engineering. Machine, called a Floturn lathe, is made by Lodge & Shipley Co., Cincinnati. (See STEEL, March 29, p. 120.)

Here's How It's Done at P & W Aircraft



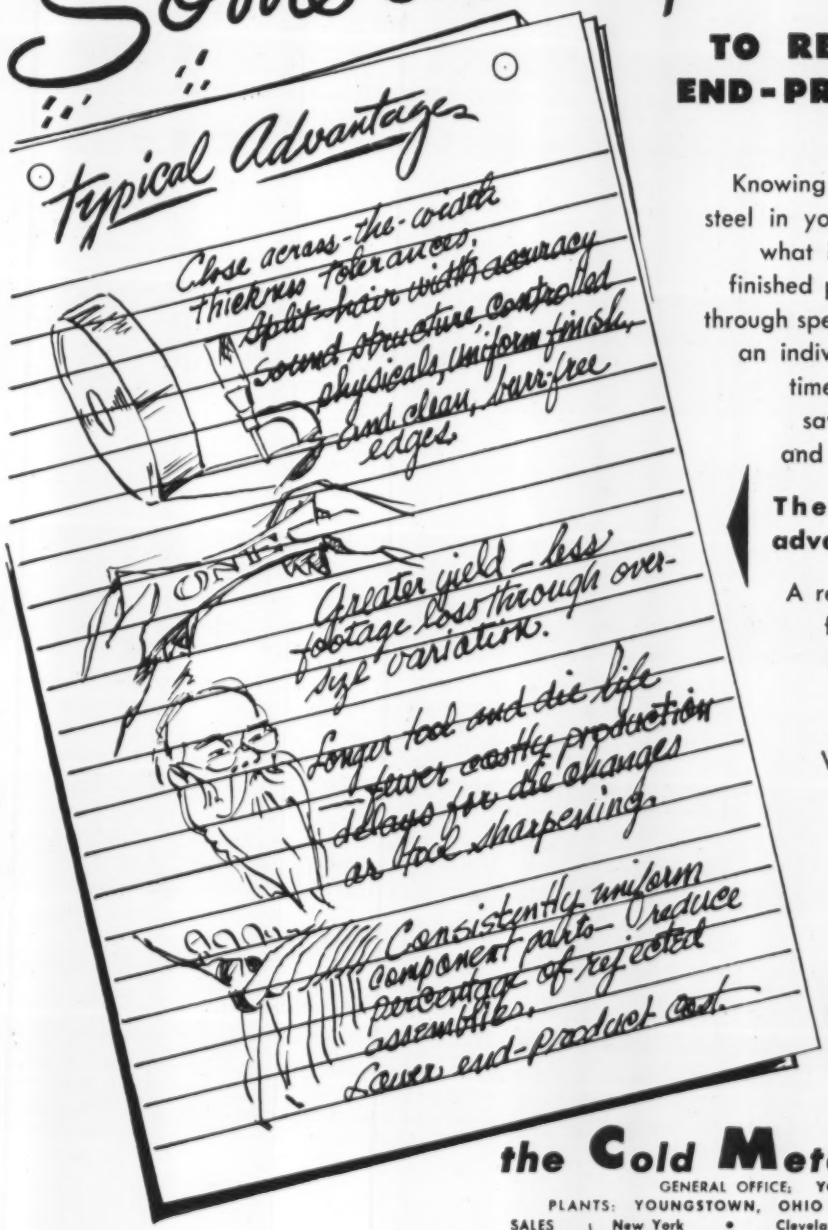
Production starts as ⅛-inch stainless steel blank is put between conical mandrel, right, and hydraulic ram

Thickness was ⅛ inch; it's now 3/64 inch. Blank has been flowed to about 7 inches. Roll pressure is 25,000 lbs

Part is removed from mandrel. Excess material will be trimmed off. This whole operation took only 5 minutes

CMP COLD ROLLED STRIP STEEL OFFERS Some Wonderful Ways

TO REDUCE END-PRODUCT COSTS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Greater yield—less footage loss through over-size variation.
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Fewer costly production delays for die changes or tool sharpening.
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Knowing how you use cold rolled strip steel in your fabricating operations and what it is called upon to do in the finished product . . . CMP can develop through special processing for those needs an individual strip product that many times makes possible important savings in fabricating, assembly and end-product costs.

These are some of the advantages you can count on

A review of your strip steel specifications in terms of what CMP precision strip steel can do for your product betterment may prove mutually advantageous. We will welcome your invitation to call.

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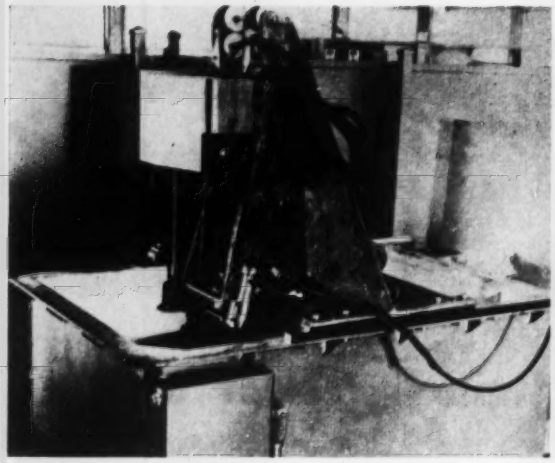
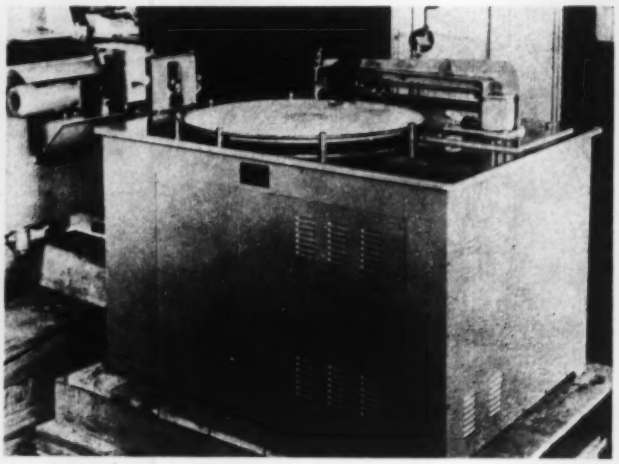


Drive consists of wide speed range, electronically controlled motor. Control is in recording turntable assembly



Recorder consists of a table, pen positioner and recording pen, rotated by same power as tank and turntable

Sonic Measurement and Control

Installation provides for the automatic inspection of rotor forgings by ultrasonic means. Results are simultaneously recorded on a circular chart

AUTOMATIC INSPECTION of rotor forging is possible with SIMAC, a sonic inspection, measurement and control device developed by Sperry Products Inc. The equipment will scan a part automatically and simultaneously record results on a circular chart.

System's Parts — The system, installed by Sperry for Allison Division, General Motors Corp., includes a scanning machine, recorder, control cabinet and an electronic console, which is also a monitoring station.

The scanning machine consists of a rectangular tank having a turntable in the bottom, horizontal ways at the top. A rigid carriage slides on the ways and is positioned horizontally by a lead screw and nut. A smaller, second carriage slides on vertical ways affixed to the horizontally-moving unit. A scanning head is pivoted to the vertically-moving carriage.

Measuring Technique — By the combination of continuously rotating the turntable and horizontal, vertical and angular positioning of the head, the specimen is completely scanned by ultrasonic beams emanating from a quartz crystal transducer mounted integrally with the scanning head. The transducer transmits short bursts of sound at 5 million vibrations per second.

Inspection is begun on the setup table where preliminary adjustments are made. Each test piece must maintain a proper relationship with the programming system while undergoing examination. Correct alignment assured, specimen and setup table are transferred to the tank, where they are immersed in water. The water serves as an efficient conductor of the ultrasonic waves between search unit and part undergoing inspection.

Controlled Lines—Each required motion of the scanning head is by servomotor obeying the command of an array of holes punched in a tape. By a scheme which provides 12 holes for each function of the machine, each motor must seek one out of a possible 4096 positions. Sixty holes are punched in the tape for each scan line.

The motors and control automatically go into action to program the positions of head, turntable speed for rotating the specimen, ultrasonic power level and four other control functions necessary to operation.

Data Recorded — Meanwhile, a recorder consisting of a table, pen positioner and recording pen, makes a permanent record on a 28-inch chart for each test. A control cabinet houses all electronic components for operating the position devices.

As the test information is supplied to the control cabinet on a tape, it is read and analyzed, control concerned set into action, and information for visual observation and manual control is presented to a console.

Function—The equipment is designed for the repetitive inspection of duplicate pieces, circular in plan. It can be adjusted to inspect a variety of specimens.

It is used for making periodic checks of machinery, in most cases without dismantling, thereby minimizing or preventing breakdowns.

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NEW . . .

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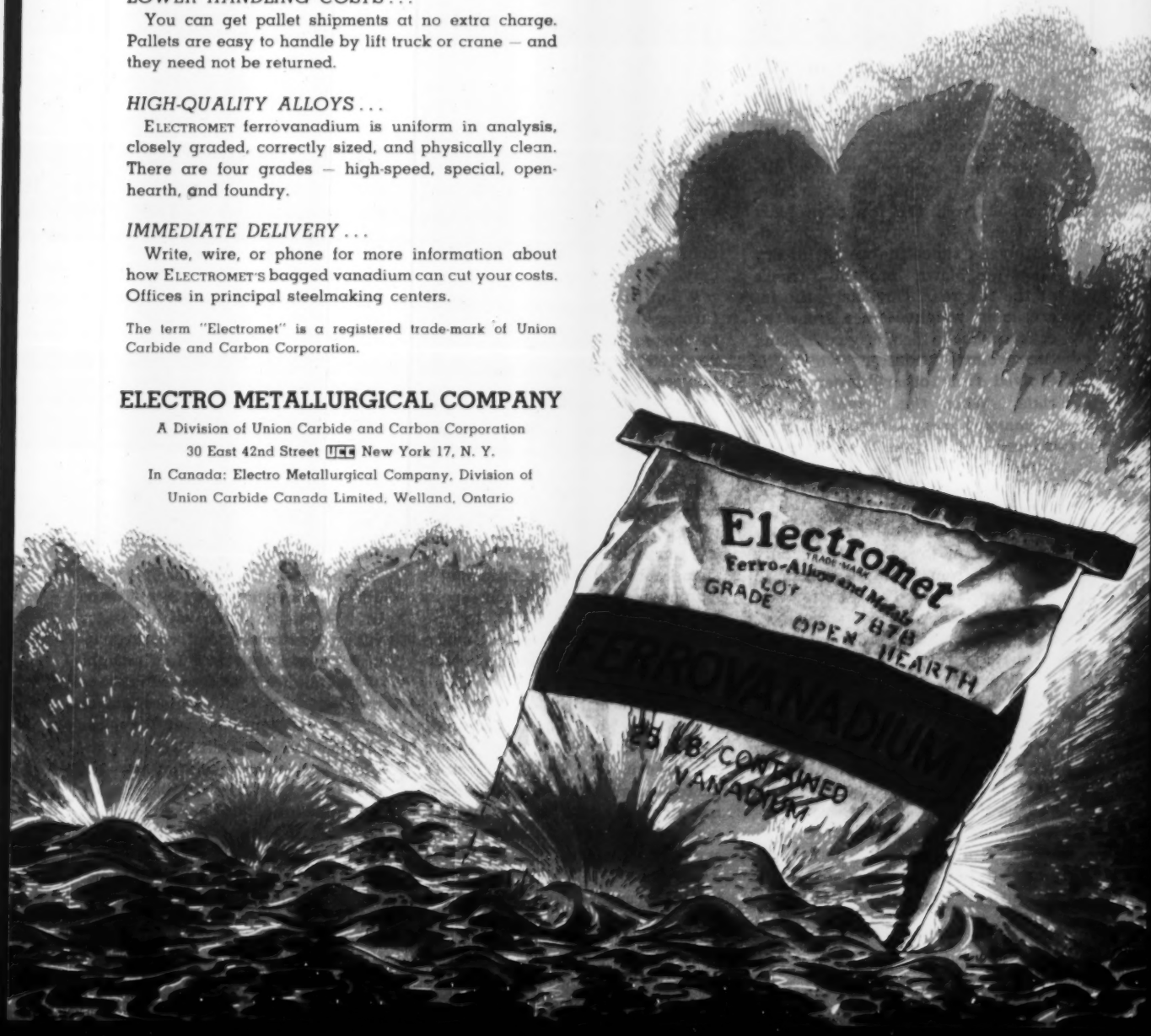

Part 3

Correlating Blast Furnace Operating Concepts

Temperatures in hearth and bosh and velocity of bosh gas are controlled by co-ordinating oxygenized blast air and burden. Slag constituents must be in proper ratio

By CHARLES E. AGNEW
Consultant
Blast Furnace and Sintering Plant Operations
Cleveland

WEIGHT of air required to produce a given weight of pig iron is double or more the weight of iron produced. The air/iron weight ratio required for burden materials ranging from natural low grade to fully beneficiated high grade varies from 2:1 to 4:1.

Technical science research discloses the weight of gas discharged from the top of a blast furnace will always be approximately 1.4 times the weight of dry blast air blown into the furnace at the tuyeres. Obviously, the increase in weight comes from the coke carbon which is gasified and the volatile matter which is evolved from other burden materials. When the weight of gas discharged from a furnace is considered in relation to its chemical composition and the heat volume (Btu) which is drained from the furnace, the major effect upon furnace operating economy from use of a raw material which is only 23.15 per cent efficient begins to be appreciated. The effects may be illustrated with comparison of gas analyses and thermal data from actual furnace operations.

Comparison of Data—Table IV contains data taken from the comparison of furnace operations previously referred to. As indicated, the weight of dry air required to produce a unit weight of pig iron will be determined by the character of burden materials used. Regardless of the weight of natural air used the gas discharged from the furnace will contain more than 50 per cent of chemically inactive nitrogen — by volume and by weight. Since gas volume is the major factor governing the mechanical action of gas disposal through the stock column, and since gas weight is the major factor governing the drainage of sensible heat from the furnace by gas, the presence at all times of over 50 per cent chemically inactive nitrogen constitutes a continuous handicap to thermal economy.

When the Btu drained from the furnace by top gas is converted to the equivalent pounds of coke required to supply it, the monetary cost of gas disposal, at current and prospective coke cost, becomes an appreciable sum.

Sacrifice Heat—However, in the correlation of practical and technical sciences it must be recognized that some sacrifice of heat for gas disposal is inevitable since the temperature of gas leaving the furnace must be maintained at a safe margin above the dew point of water vapor (212°F) to prevent formation of flue dust sludge in the downcomers and dust catcher.

Nevertheless, the indicated effect of dry gas weight, and weight of water charged with stock to prevent excessively high top temperature, emphasizes the fallaceous nature of theories which advocate use of a fast blowing rate in preference to beneficiation of burden materials before charging them into the furnace, and/or introduction of auxiliary gases into the furnace. Any increase in gas weight increases drainage of heat from the furnace and forces reduction in ore/coke burden ratio—which is detrimental to both productive capacity and the fuel rate.

Air Beneficiation — Because of the virtual exhaustion of natural high-grade blast furnace burden materials (ore, fuel, and fluxing stone) in the United States, the iron industry is now in an era of forced beneficiation of low-grade materials to replace them. Since natural blast air is at best only 23.15 per cent efficient in chemical activity which is of value to furnace operation, but always constitutes approximately 50 per cent of the total weight of raw materials charged per unit of iron produced, it must be recognized that beneficiation of burden materials alone constitutes only 50 per cent of any raw material beneficiation program.

Technical science teaches that air beneficiation can be effected in two ways: Removal of water vapor, and enrichment of the natural oxygen content. In the light of the limited success which has been had in full scale furnace operation from use of dry air plants, and the failure of the initial full scale trials of oxygen enrichment, in the United States and in Europe, it is evident that here again there is a situation which calls for a review of available particulars with careful discrimination.

Variable Value — Practical value of raw material beneficiation is determined by the advantage it confers upon furnace operating economy. Opportunity for economical beneficiation varies with the property characteristics of available raw materials. Therefore, the nature of beneficiation which will be of greatest economic value to furnace operation is a variable.

Specifically, with burden materials beneficiated to the degree indicated at East operation, the effects of blast air properties which are detrimental to furnace operating economy are automatically reduced with a reduction in the weight of air required for production of a unit of iron. As indicated, the advantage gained is twofold—reduction in thermal requirements for material processing, and reduction in blast air requirement without sacrifice of the productive capacity of the furnace.

If burden materials cannot be beneficiated economically to the degree of the East materials, advantage may be had from air beneficiation, provided thermal requirements and effects within the furnace are controlled through burdening in a manner which permits its use.

Oxygen Delivery—*Technical science* teaches that the volume of heat generated at the tuyeres from coke carbon combustion, per unit of air blown, or per unit of time, will be determined by the weight of oxygen which is delivered to the tuyeres, per unit of air or per unit of time. In short, the rate of heat generation will be determined by the rate of oxygen delivery.

Technical science teaches that the rate burden materials can be processed is determined by the rate the materials can absorb and utilize heat while effecting the reactions which are necessary to the processing. In short, the smelting rate is determined by the rate heat can be used and not by the rate it can be generated.

Effective use of heat requires effective distribution of it to the zones of operation where the respective reactions occur.

Maintain Equilibrium—*Practical science* teaches that equilibrium between the rates of heat generation and distribution must be maintained in order to maintain equilibrium between the work of burden preparation and smelting. Although natural air is only 23.15 per cent efficient in chemical activity (carbon combustion) which has value to the furnace operation, the 76.85 per cent chemically inactive nitrogen has physical value since it becomes a part of the products of combustion—the agent for heat distribution.

Practical science teaches that substitution of oxygen (at. wt 16) for an equal percentage of nitrogen (at. wt 14.01), plus subsequent assimilation of carbon (at. wt 12) after combustion, will produce products of combustion having virtually the same weight as products produced with natural air (increase only 0.0064%) but each 1 per cent substitution of oxygen for nitrogen increases heat volume (Btu) production 4.34 per cent. (See "Blast Furnace Practice"[8], page 54, Table XIX)

Lose Control — Obviously, with increase in heat volume production without proportionate increase in means for its distribution and consumption, the equilibrium between the two actions will be destroyed. Unless means are provided for consuming the increased production of heat in the hearth of the furnace, before its ill effect can be reflected in destruction of equilibrium between divisions of burden preparation and smelting, control of the furnace operation will be lost. Means as specified can be provided through burdening the furnace in such manner that the smelting division will be thermally deficient in relation to the burden preparation division.*

Principle Still Maintains — In short, the basic 2-stage principle of furnace operation is again the controlling factor because any additional heat in excess of equilibrium requirements made available at the tuyeres through an increase in the blast temperature, the removal of water vapor from blast air, the enrichment of the air from oxygen, must be consumed in the hearth of the furnace in order to prevent disturbance of equilibrium between the divisions of burden preparation and smelting.

The inability of most soft ore furnace operations to use high-blast temperature, the limited success obtained from the use of dry air plants, and the failure of the

[8]"Blast Furnace Practice," Vol. 1, by Fred Clements, general manager, Park Gate Iron & Steel Co. Ltd., Rotherham, England. (Book at present is out of print.)

*Patent application has been filed covering means for using oxygen enriched air.

TABLE IV

Comparison of air-gas data of three-furnace operation (Per gt of iron)

		South		North		East	
Air (dry), lb		9,627.88		6,673.00		4,548.00	
Moisture in air, lb		67.92		69.00		47.60	
Gas (dry), lb		13,244.89		9,359.00		6,622.00	
Moisture in gas, lb		559.00		603.00		106.00	
Gas/air weight ratio:							
dry		1.37/1.00		1.40/1.00		1.45/1.00	
wet		1.42/1.00		1.48/1.00		1.46/1.00	
Gas analyses:							
By volume, %	CO	30.04		23.50		28.00	
	CO_2	9.78		14.90		14.50	
	CH_4	.....		0.20		.....	
	H_2	2.17		4.10		0.50	
	N_2	58.10		57.30		57.00	
		100.00		100.00		100.00	
		Lb	%	Lb	%	Lb	%
By weight	CO	3,868.85	29.21	2,096.64	22.40	1,719.07	25.96
	CO_2	1,952.30	14.74	2,087.06	22.30	1,399.23	21.13
	CH_4	.....	....	9.36	0.10	.....	....
	H_2	19.88	0.15	28.08	0.30	1.99	0.03
	N_2	7,403.86	55.90	5,138.09	54.90	3,501.71	52.88
		13,244.89	100.00	9,359.23	100.00	6,622.00	100.00
Top gas temperature, ° F		334.4		325.0		350.0	
Btu taken from furnace:							
By gas (dry)		1,083,650		752,400		574,692	
By H_2O in gas		651,819		700,100		122,241	
Btu/lb gas (dry)		81.80		80.40		86.70	
Btu/lb H_2O in gas		1,166.00		1,161.00		1,183.00	
Btu taken from furnace by nitrogen		605,760.35		413,067.60		303,897.12	
Equivalent lb C @ 4370 Btu/lb C:							
Total gas (dry), lb		247.97		172.17		131.27	
Nitrogen in gas, lb		138.61		94.52		69.54	
Equivalent lb coke @ 89.00% fixed C:							
Total gas (dry), lb		278.61		193.44		147.49	
Nitrogen in gas, lb		155.74		106.20		78.13	

initial attempts to successfully use oxygen-enriched blast air, are cited as practical demonstrations of the principle.

Oxygenized Air — Since the weight of gas produced from carbon combustion at the tuyeres remains virtually unchanged with substitution of oxygen for nitrogen in blast air, the mechanical effects from disposal of gas through the stock column would remain unchanged with like temperature conditions. However, proper co-ordination between use of oxygenized air and furnace burdening provides means for controlling hearth and bosh temperatures, as well as the gas velocity leaving the bosh. The advantage would be reflected in improved mechanical effects from gas disposal.

With gas weight unchanged, the amount of sensible heat drained from the furnace by top gas would remain unchanged with like top temperatures. However, latent calorific value of top gas produced with oxygenized blast air would be increased over natural air gas to the extent of the reduction effected in nitrogen content and increase in carbon monoxide (CO) content. The increased calorific value of the gas would be reflected in increased credits to furnace operation from associated operations using the gas.

Increases Combustion Rate— Since substitution of oxygen for nitrogen in natural air increases the coke carbon combustion rate it also increases the stock travel rate in like proportion. Since the possible rate for stock processing is determined by the rate heat can be used, and not by the rate it can be generated, the amount of oxygen which can be substituted for nitrogen will always be determined by the stock processing rate.

From this premise it may be said that the substitution of oxygen for all nitrogen contained in natural blast air will always be impractical because of the vital need for maintaining equilibrium between the actions of heat generation, distribution, and use. However, since the practical maximum stock travel rate can be maintained with less weight of oxygen-enriched air than with natural air, and savings effected thereby from reduction in gas weight produced, the practical rate of enrichment probably would be governed by the production cost of commercial oxygen.

Better Basement Storage

Eight Westinghouse dehumidifiers in basement storage mean about $4000 a year savings to Racine Hydraulics & Machinery Inc. The firm reports formation of rust on finished products and parts stored in the 70,000-cu-ft basement area is prevented by removal of as much as 24 gallons of water from area over every 24-hour period

Nitrogen Disadvantage — The disadvantage to furnace operating economy from the 76.85 per cent chemically inert nitrogen in natural dry air has long been recognized by blast furnace engineers. Until recent years commercial oxygen has not been available in sufficient quantity, or at low enough cost, to permit or justify full scale demonstrations to counteract the disadvantage. It is sometimes said the cost of commercial oxygen is still too high to justify its use in blast furnace operation.

But justification for use of any raw material should be judged by the benefits obtained from its use rather than by its initial cost. An increase in iron production and a decrease in fuel consumption are the attainable objectives from use of oxygenized blast air. With the current and prospective cost of furnace coke the use of commercial oxygen at the currently reported cost of production can be justified.

Supply Is Unlimited—The source of supply for commercial oxygen (natural air) is inexhaustible and obtainable everywhere at no cost. No other blast furnace raw material enjoys that advantage. Reduction in the cost of production for commercial oxygen is a matter of perfecting mechanical equipment which can process natural air more economically than existing equipment can do it.

Mechanical Action — Since furnace gas has substance, it occupies space. Like all gas it is subject to the laws of physics; consequently the volume of any given weight of it will vary with temperature and pressure. Since physical dimensions of a blast furnace are fixed, the tendency of furnace gas to expand in volume with changes in temperature and pressure within the furnace is reflected in velocity.

Within a blast furnace the interstices of the stock column will constitute the channel through which the gas column must rise. Obviously, the degree of uniformity in size of the interstices, and uniformity of gas flow through any given plane of the furnace, will be determined by the particle size range of burden materials which constitute the stock column.

Assures Free Gas Flow—Where there is a substantial difference in the particle size of burden materials the center of the column will be more open to gas flow than any other section. Technical science research[4] has measured the flow of gas for two furnace operations at different planes of the furnace and at different sections of each plane. Both furnaces were using natural ores having particle size ranges of plus or minus 5 inches to dust. Recorded rates of gas flow varied from 35 to over 400 feet per second—truly supercyclonic proportions.

When mechanical effects of gas disposal, as determined by its weight and velocity, are considered in relation to the thermal effects and requirements of furnace operation, the degree of influence it exerts upon the relationship between burden preparation capacity and smelting capac-

[4]Technical Papers Nos. 391, 397 and 422, by S. P. Kinney, P. H. Royster and T. L. Joseph, United States Bureau of Mines, Washington.

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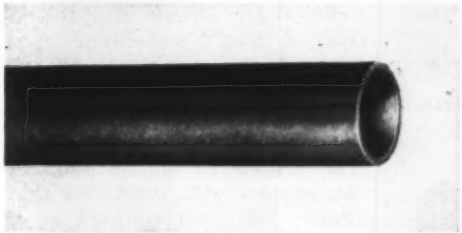

F-3 has higher tensile strength, lower creep rate, greater bursting strength, and higher resistance to bending fatigue and vibration. Specify F-3 Lead Sleeve and be sure. *Reg. U. S. Pat. Off. 54347

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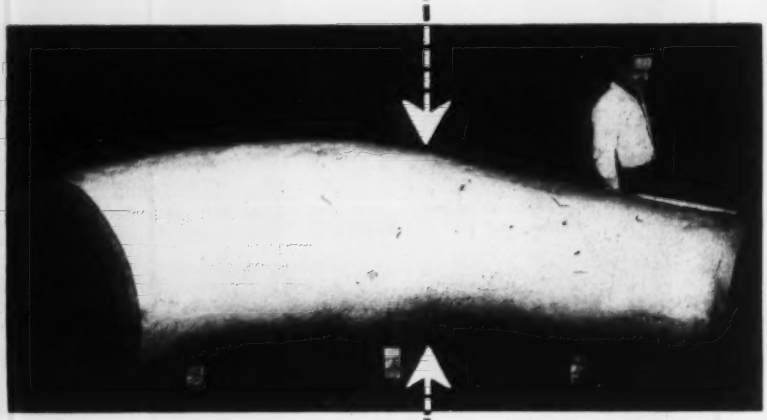

Casting weight
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Shipping weight
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Alloying Elements
38% Ni., 18% Cr., 2% Mo.

Set a Record!

It's the weight rather than the Ni-Cr content that's the record.

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ity is greatly clarified. Probably no other phase of furnace operation is of greater importance to the subject of correlation of practical and technical sciences than the effect which temperature within the furnace has upon the mechanical action of gas and stock flow through the furnace.

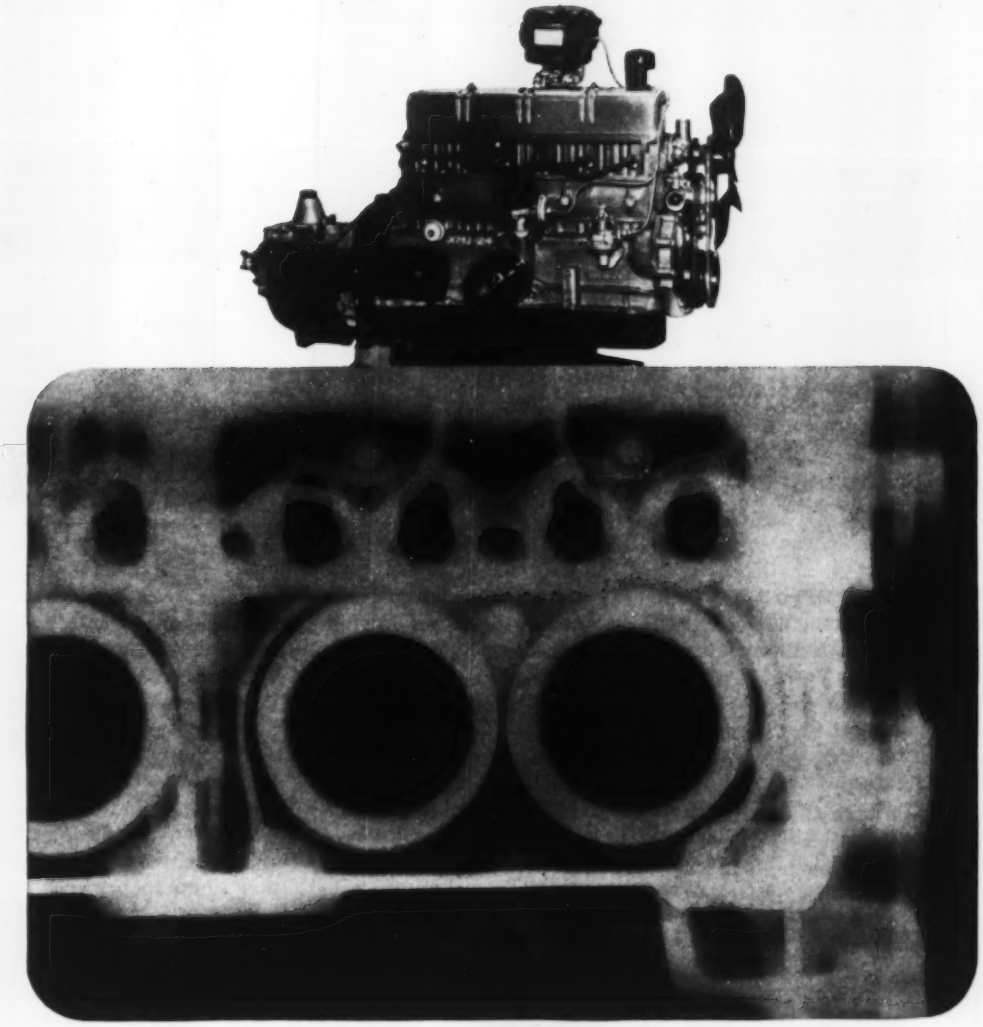
Basic Truths—*Practical science* teaches that the flow of the two materials must be maintained in a state of equilibrium in order to control the furnace operation and the chemical composition of the products produced.

Technical science teaches that the temperature required to form slag will always be the maximum requirement and it will be determined by the slag mineral composition—not by its chemical composition. Also, the temperature requirement will vary with progressive changes in slag composition as slag forming constituents of the burden materials vary in their ratios to each with progressive completion of the several thermochemical reactions of the smelting operation.

Slag Composition Vital—It may be stated as a principle that a furnace can be burdened with slag forming constituents in ratios to each other so that temperature requirements in the smelting operation will be favorable to the maintenance of equilibrium in mechanical effects from gas and stock flow through the furnace, but if the slag constituents are not in the proper ratio to each other, unfavorable effects from the mechanical action are inevitable. To profit from this principle the teachings of technical science must be utilized before the burden materials are charged into the furnace.

In the light of the teachings of technical science regarding the effect of slag composition upon temperature requirements, the effect of temperature upon mechanical action of gas disposal, and the support which practical operation gives to the teachings, it can be said with conviction that proper slag composition is of greater importance to successful furnace operation than the weight of slag produced.

(*To be continued*)



Production line "bugs" get X-RAYED out on the pilot model

MASS production of car engines calls for a continuous run of castings as uniformly sound as it's possible to pour. No sand holes. No gas holes. No core shifts.

Manufacturers take care of that early in their plans. They radiograph pilot castings—can spot thin walls, "out-of-rounds," and other irregularities which a change in casting procedure can forestall.

Improving yield is one of the reasons more and more foundries are making radiography routine. It is the one way to be sure only high-quality work is released.

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Platers Share Secrets

Special baths for engineering plating are unveiled. Copper and alloy deposits are discussed as substitutes for scarce nickel in undercoats for decorative chromium

By DR. ALLEN G. GRAY
Technical Editor

Frederic B. Stevens

TECHNICAL DEVELOPMENTS highlighted the 41st annual convention of the American Electroplaters Society in New York, July 12 to 15, but the number one question of the industry (how to get by on short nickel) was left unanswered.

All were satisfied that electroplating is rapidly becoming more scientific. But the crying need is sufficient nickel for quality coatings.

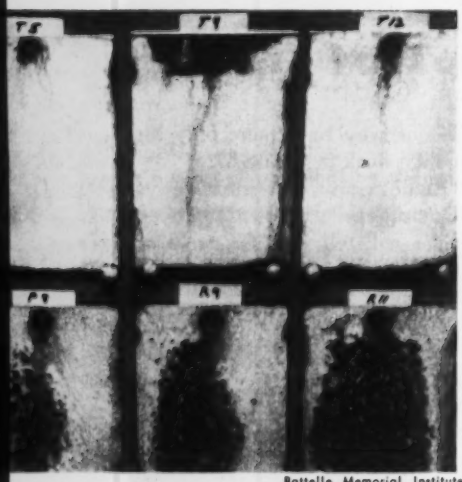
Substitutes came in for the usual session and behind-the-scenes discussion. Some platers even feel that the finishing industry may not be facing up to facts: The importance of nickel in high temperature alloys and other essential defense uses may prevent free availability to platers for some time.

The outlook adds up to a more serious look at what can be accomplished with properly engineered modern copper and alloys, —bronze, for instance—as undercoats to stretch nickel and to substitute for thickness not available with it.

Start—The first technical session was kicked off along this line. B. D. Ostrow, Lea Ronel Inc., New York, discussed fundamental aspects of leveling studies in cyanide copper plating baths; F. I. Nobel, (same company) discussed similar aspects of acid copper plating baths.

Results given are still in the research stage. The speakers stated their studies indicated that leveling is related to: 1. Deposition potential in the bath and 2. polarization caused by addition agents.

Economic significance of level plating is tied to possibility of eliminating or reducing expensive hand polishing and semi-automatic buffing operations, so common in automotive and appliance fields, and still produce acceptable plated work. Problem of copper leveling is being attacked in several directions. Periodic-reverse current and interrupted current are two approaches being followed commercially.



Battelle Memorial Institute

Plated steel panels exposed at Daytona Beach, Fla.—Jan. 1 to June 15, 1954. Top: 0.001-inch bronze, 0.0002 nickel, 0.00001 chrome. Bottom: 0.001 to 0.0012 nickel, 0.00001 chrome.

New Anode—Another development important to copper plating: Ralph P. Nevers, American Brass Co. research chemist, reported that phosphorized copper anodes give freedom from copper sludge in acid copper plating. Other benefits cited: No bagging or diaphragms required; no copper buildup in solution; exceptionally smooth, heavy cathode deposits; and 10 to 15 per cent more cathode deposit per pound of anode.

Adding 0.02 to 0.03 per cent phosphorus to electrolytic copper gives an anode that develops an adherent brown film in the plating bath. This film suppresses formation of metallic particles.

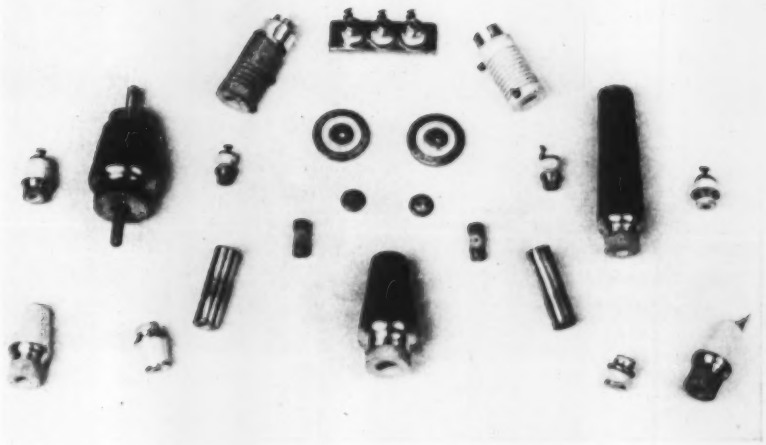
Less Waste—More copper is deposited on the cathode—10 to 15 per cent were figures given by Nevers. No additional voltage is needed to overcome the film. Deposits $\frac{1}{8}$-inch thick, and thicker, free of pits and rough growths can be made with phosphorized copper anodes. Deposits are free of phosphorus.

Proved—American Brass phosphorized copper anodes have been used for 6 years on an evaluation basis in a large commercial electroforming operation, where requirement was for an exceptionally smooth, dense plate on a fine, intricate pattern.

The new anodes are designated "Anaconda Plus-4" and will be sold at same price as regular electrolytic copper anodes.

Alloy Substitute — A bronze

Slush mold for vinly plastisol resin electroformed in copper. Inside surface is electroless nickel plated



These ceramic parts have been selectively plated. Bond strength between metal and ceramic is 2000 to 2500 psi

plate—consisting of about 20 per cent tin, balance copper—followed by chromium is nearly the equal of nickel-chromium plate. Results are based on latest Battelle Institute tests reported to the platers by W. H. Safranek and C. L. Faust.

Two important properties of copper-tin alloy plates: Good leveling and good protection against corrosion. Bronze plus thin nickel plate shows up better than thick nickel plate in outdoor weathering tests in a marine atmosphere and is as good as nickel plate in industrial atmosphere. Bronze plus chromium is better than copper plus chromium.

Leveling — Bronze alloy plate that smooths rough basis metal surfaces as much as 40 to 65 per cent per 0.001 inch of plate can be deposited from a pyrophosphate type bath. Bath has unusual tolerance to impurities, outstanding throwing power and gives a bright plate.

More news on tin alloy plating systems was given by F. A. Lowenheim, Metal & Thermit Corp., Rahway, N. J. Data given showed how throwing power is affected by variations in plating conditions in tin-zinc, tin-nickel, tin-copper alloy plating baths.

Engineered Uses—Since World War II, applications for metallized nonconductors have grown to such an extent that the methods used are valuable to many industries and are important to defense operations, Harold Narcus, president, Electrochemical Industries Inc., Worcester, Mass., told platers.

Printed electronic circuits make it possible to condense the size of assemblies, to mechanize wiring and reduce it to two dimensions for less complexity. Several methods are used: Painting, spraying, chemical deposition, vacuum processing, die stamping, dusting and painting.

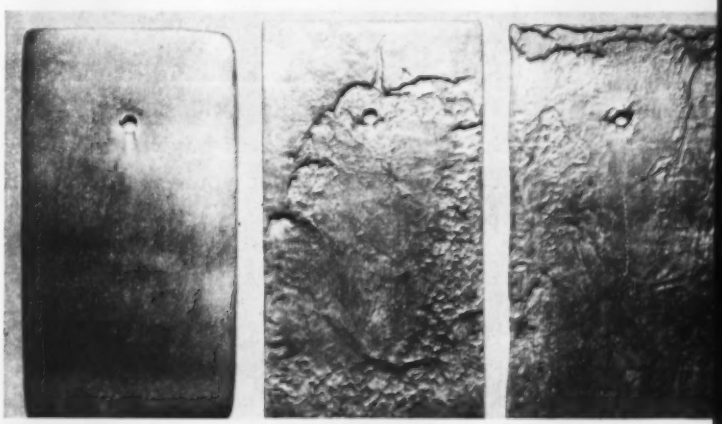
Plate Here—For many uses it is necessary to build up the thickness of the initial coating to improve electrical conductance and get better mechanical properties. "Electroplating is the most practical way to do this," quoting Narcus. Nonconductive material may be plastics, glass or ceramics.

Plated Glass—Base material for many printed circuit components —inductances and capacitors of several types—is glass. Metal coatings of low resistivity are formed by firing silver compositions into the glass surface.

Usually this fired-on silver coating is electroplated with copper followed by tin or lead-tin alloy. In some cases the plated copper is hot tin dipped to improve solderability. Special types of fired-on coatings can be soldered to directly and do not require plating.

Molds—Slush molding is ideally suited to organic plastisols of the vinyl type; no pressure at all is used in the process. Working molds are produced by copper plating for 3 to 5 days—depending on size of the part.

Start—The initial conductive film



Corroded copper anodes show beneficial effect of added phosphorus. Left, phosphorized; center, fire-refined; right, electrolytic tough pitch

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is applied with a conductive paint or by vacuum deposition. A chemical reduction process using ammoniacal silver nitrate with formaldehyde works fine in many plants. Buildup of copper is done from the conventional acid sulphate bath or the fluoborate solution. Nickel sulphamate bath gives good results for nickel buildup. In some cases nickel is preferred over copper.

In view of the intricacies of a slush mold, electroless nickel may be the answer. It avoids throwing power problems. (photo, p.101) A final hard chrome plate on the inside surface is good for both wear and ease of removal of the molded article.

Masks or stencils made by electroforming are used with spray equipment and accessory jigs and fixtures. They have lowered costs of many decorative finishing jobs by cutting out hand painting operations.

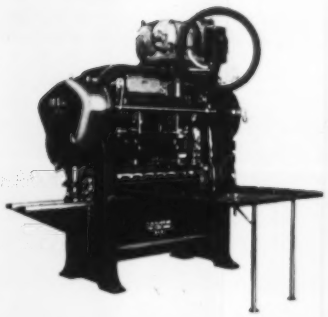
More on Sulphamate — The sulphamate bath mentioned above came in for discussion of its own. R. C. Barrett, Barrett Chemical Products Co., Sheldon, Conn., said outstanding feature is stress-free deposit.

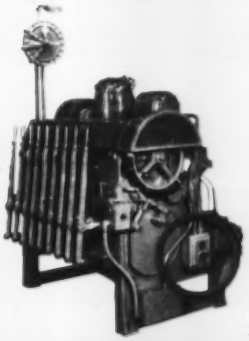
A case in point is sulphamate nickel has been used for two years by two aircraft engine producers for plating parts without endangering their fatigue resistance. In certain cases, heavy nickel plate under compression is used to increase fatigue life of parts by protection of surfaces from nicks, scratches or dents that might lead to fatigue failure.

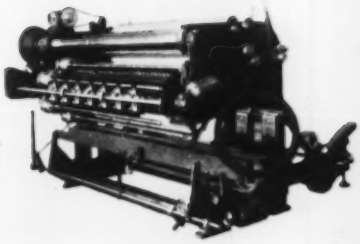
Two examples: Protection of the leading edges of propeller blades and jet engine compressor blades from small stone abrasions with heavy plating of hard nickel under 2500 to 8000 psi compressive stress.

More Stress — Chromium, too, came in for its share of stress discussion. Stress in different types of electrodeposited chromium was subject of a paper by A. C. Tulumello, E. J. Seyb and J. E. Stareck, United Chrominum Inc.

Stress in chromium plate was correlated with its crack pattern. Certain deposits near the upper limit of the range have a negative or compressive stress.







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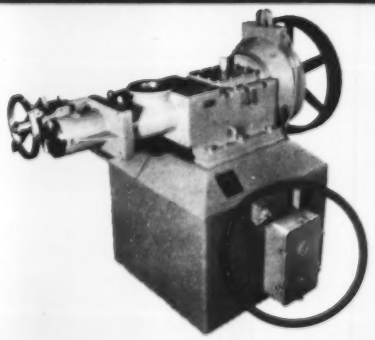
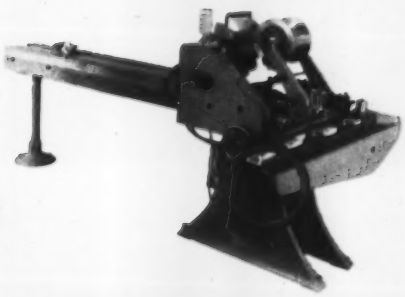
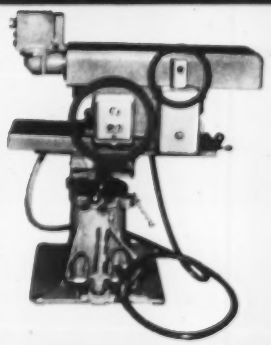
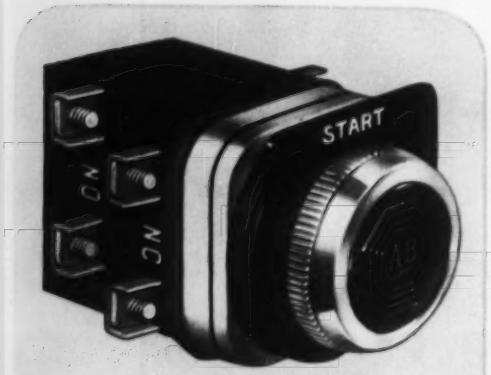




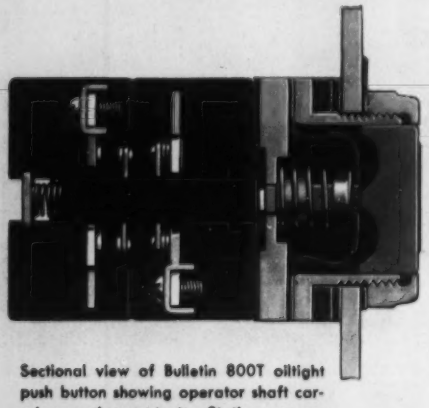


7-54-MR

OILTIGHT PUSH BUTTONS



Start Button with Double Pole NC and NO Contacts



Sectional view of Bulletin 800T oiltight push button showing operator shaft carrying moving contacts. Stationary contacts are mounted in the molded contact block. The oiltight flexible diaphragm is between push button and contact block.

Here are a few of the many Allen-Bradley oiltight pilot units for machine tool service. They are available for mounting on machine frames in a variety of single units or in any combination of one or more units in oiltight enclosures. A flexible diaphragm, not affected by oil or cutting fluids, is inserted between button and contact block (see diagram at left) to prevent oil seepage into the contacts.

The silver alloy contacts are maintenance free. For complete information on the Bulletin 800T line, send for the new Allen-Bradley Handy Catalog.

Allen-Bradley Co.
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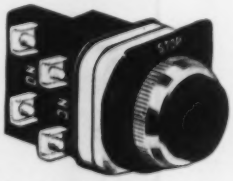
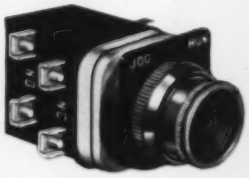


Type BA Stop Button

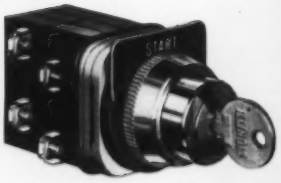
Type H2B Selector Switch



Type K2B Jog Button

Type 6PX Pendent Control

Bulletin 800T Type 2TA in Two-button Oiltight Enclosure



Type E11B Cylinder Lock Button

Type P26 Pilot Light

Assemble any combination of operators and contact blocks

OPERATORS

CONTACT BLOCKS

Bulletin 800T operators and contact blocks are available in many forms. They may be assembled interchangeably in various combinations, thus reducing your motor control parts inventory.

A-B

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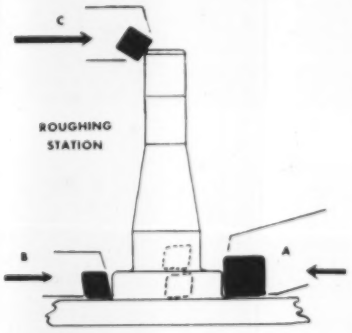
New Tools Step Up Job

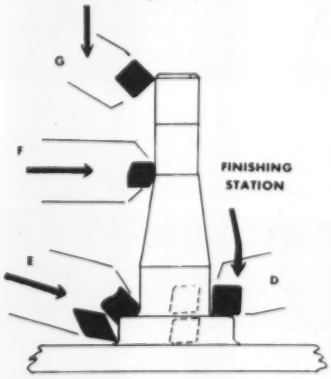
MULTIPLE TOOLING on front wheel spindle production has reduced downtime, grinding and simplified tooling at a large automotive plant. At the same time part production has jumped from 600 to 1200 spindles per machine per shift.

The spindles, SAE 5132 with a Brinell of 250 to 302, are turned on 4-station, 10-inch vertical Contin-U-matics. The Bullard machines are hydraulically operated and are equipped for automatic retraction. The tail stock, manually advanced, has an antifriction center.

Operation — In roughing, the tooling consists of three Wesson



band type Multicut holders. Tool (A), with a ¾-inch square carbide insert, faces the spindle flange and turns the large bearing diameter. The facing proved to be the toughest on this station since the



carbide is subject to severe interrupted cuts. However, one cutting edge produces over 90 pieces with a minimum of wear.

Tool (B) finish faces the flange and turns a ⅛-inch radius on the flange end of the bearing diameter. At the same time, tool (C) finishes a ⅛ x 45-degree chamfer on the stem end. Roughing is performed at 510 sfm with a ⅛-inch depth of cut.

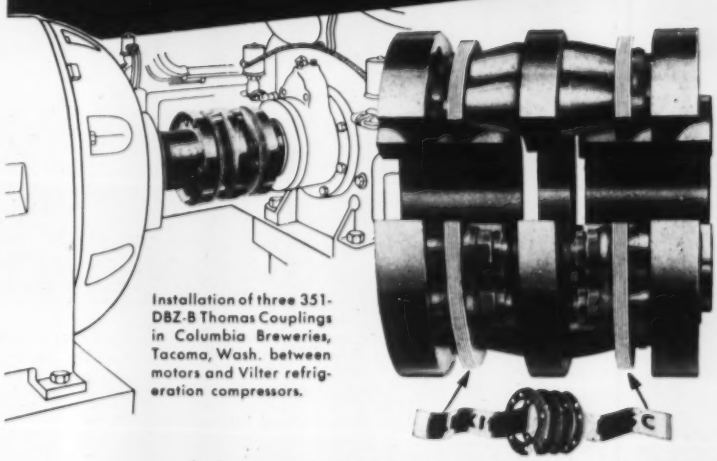
Double - Up — In eliminating grinding problems on new tooling, a special insert was applied to holder (E) on the finishing station which now turns the 0.050-inch radius on the flange end of the bearing diameter.

In the same holder, another special Wessonmetal insert turns and forms special radii on the stem end of the bearing diameter.

Change — All inserts on the roughing and finishing station are indexed after 250 pieces, averaging two complete insert changes per shift. Only exception is the roughing tool, (A), which is subject to severe interrupted cuts while facing the flange.

With previous tooling several difficult machining operations were encountered which resulted in excessive downtime and grinding. A large factor in converting to the new tooling was the high tool breakage encountered with previous setups.

THOMAS FLEXIBLE COUPLINGS...
for more years of better service!



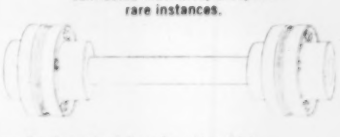
Installation of three 351-DBZ-B Thomas Couplings in Columbia Breweries, Tacoma, Wash. between motors and Vilter refrigeration compressors.

Patented Flexible Disc Rings of special steel transmit the power and provide for parallel and angular misalignment as well as free end float.

DISTINCTIVE ADVANTAGES

FACTS	EXPLANATION
NO MAINTENANCE	Requires No Attention. Visual Inspection While Operating.
NO LUBRICATION	No Wearing Parts. Freedom from Shut-downs.
NO BACKLASH	No Loose Parts. All Parts Solidly Bolted.
CAN NOT "CREATE" THRUST	Free End Float under Load and Misalignment. No Rubbing Action to cause Axial Movement.
PERMANENT TORSIONAL CHARACTERISTICS	Drives Like a Solid Coupling. Elastic Constant Does Not Change. Original Balance is Maintained.

Thomas Couplings are made for a wide range of speeds, horsepower and shaft sizes and can be assembled or disassembled without disturbing the connected machines, except in rare instances.



THOMAS

Write for our new Engineering Catalog No. 51A

THOMAS FLEXIBLE COUPLING COMPANY
Largest Exclusive Coupling Manufacturer in the World
WARREN, PENNSYLVANIA, U.S.A.

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And there's never a question of quality with the sheets and strip you buy from U.S. Steel Supply . . . it's all good, dependable USS Steel. Our unusually wide selection of USS sheets and strip means you'll get immediate delivery of just the type, grade and size you want. Call us for: hot rolled, cold rolled, Vitrenamel, galvanized, galvannealed, paint bond, corrugated, long terne sheets, and hot rolled and cold rolled strip.

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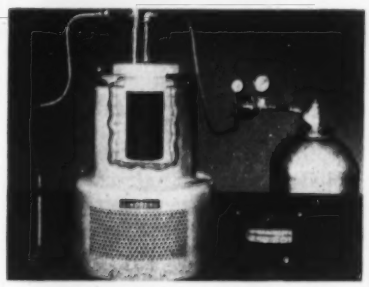
NEW PRODUCTS and equipment

Reply card on page 113 will bring you free literature, editorial clips or more information on new products and equipment described or advertised in this issue

Dissociated Ammonia Generator

. . . test and pilot lab runs

Lindberg has completed extensive tests on this commercial laboratory-size dissociated ammonia generator. The unit, the Labhyam, is offered to metallurgical laboratories for test and pilot runs on the following processes: Bright annealing electric metals and stainless steels, bright annealing or bright tempering of any ferrous or



nonferrous metal or alloy, bright copper or silver brazing, sintering or reducing powder metals requiring a strong reducing atmosphere.

Atmospheres equivalent to commercial cylinder hydrogen are produced for approximately one-third its cost. Lindberg Engineering Co.

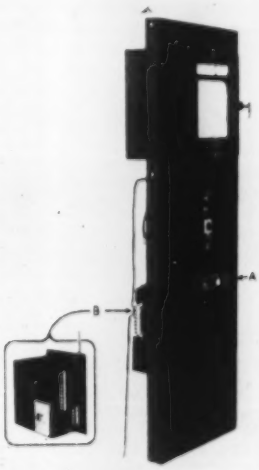
FOR MORE DATA CIRCLE REPLY CARD NO 1

Thermocouple Circuit Checker

. . . checks quickly for faults

Poor, loose or oxidized connections in thermocouple circuits are a common cause of error of pyrometer indication and control. A new device, the Restorer, checks quickly for faults and at the same time repairs these temporarily.

The Restorer consists of a push-button station and a power-pack. By operating the button, a special pulse of electrical energy is sent through the thermocouple circuit bridging the loose, corroded and defective joints. A reading then obtained is the true reading. A difference in reading before and after



use of the Restorer indicates a fault. The device is available for manual or automatic operation. Sherman Electric Co. Inc.

FOR MORE DATA CIRCLE REPLY CARD NO 2

Self-Setting Clamps

. . . no need for packing

The Autoset clamp is designed to keep lines of force always at right angle to the work, the table

and the washer, providing greatest possible clamping strength. Three curved, interrelated contact surfaces allow automatic setting and eliminate the need for packing. The clamp has no movable parts such as pins or threads that could wear out and cause replacement costs. Washers are chained to the base to prevent loss. Custanite Corp.

FOR MORE DATA CIRCLE REPLY CARD NO 3

Tool Kit

. . . for special event giving

A variety of tool kits is being offered by Utica for special event giving, prizes, awards and premiums. The wallet-sized kits are

available in standard assortments of four midget tools 4 or 5 inches long. They're also available with a choice of any two of fourteen types of midget tools or with one Utica pliers or adjustable wrench. Utica Drop Forge & Tool Corp.

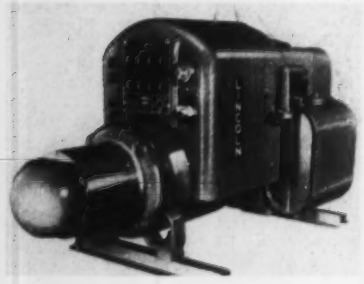
FOR MORE DATA CIRCLE REPLY CARD NO 4

Welder and Power Unit

. . . on-the-spot maintenance tool

The Weldanpower machine is a combination welder and auxiliary or standby power unit for maintenance work. It features low cost, large-capacity and simultaneous output of both welding and auxiliary current. It's rated as a 200-amp welder and a 4-kva continuous duty power unit. For intermit-

tent standby power rating is 5 kva. The machine should be useful



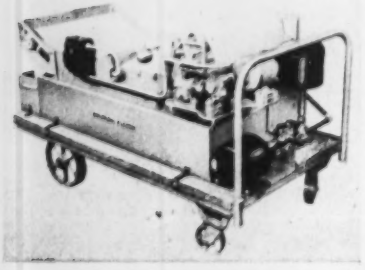
for eliminating stringing power supply lines to make on-the-spot repairs. Lincoln Electric Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 5

Portable Filtration Unit

. . . with disposable filter

A portable filtration unit incorporating the Delpark disposable belt-type filter is transported easily for periodic filtration of various liquids and oils which do not require continuous filtration. These



units make use of a variety of filter media for numerous filtration requirements and may be used on quenching oils, cutting oils, coolants, hydraulic oils, test stand oils, etc. Industrial Filtration Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 6

Aluminum Cleaner

. . . no metal etching

A detergent for rapid cleaning of aluminum, called aluminum cleaner NE-6, is mild in alkalinity, does not etch metals either at the air interface or in contact with other metals.

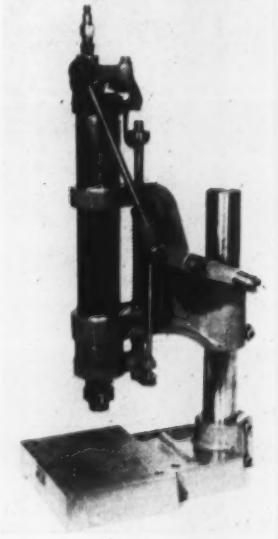
It has excellent ability to disperse oils and to remove marking ink and crayon normally present on aluminum sheet. The cleaner is recommended for cleaning cast and wrought aluminum prior to anodizing, chromate treatments, organic finishing, resistance welding and plating by the nonetching process. Enthone Inc.

FOR MORE DATA CIRCLE REPLY CARD NO. 7

Impact Machine

. . . smaller, simplified version

Model 2-CSB air-operated impact machine is a smaller and simplified version of the model 3-VS. It is essentially a single-stroke air hammer, with hammer



moving within a closed cylinder and impact force transmitted through a toolholding chuck. Applications include impression marking in steel, staking, assembling, impact shearing of plastics and other operations where force by impact is desirable.

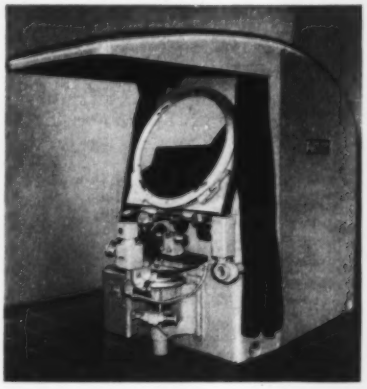
Length of hammer stroke is constant and force of impact is adjusted by regulating volume of incoming air. Surge chamber is at the upper end of the cylinder. Impact range is from zero to about 7000 pounds, compared to 30,000 pounds for model 3-VS. Heidrich-Nourse Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 8

Optical Comparator

. . . wholly-integrated design

Standard model FC-30 optical comparator is a wholly-integrated design, built to machine tool standards. It allows the operator to stage cumbersome parts easily on the low-level work table and to work within inches of the eye-level viewing screen.



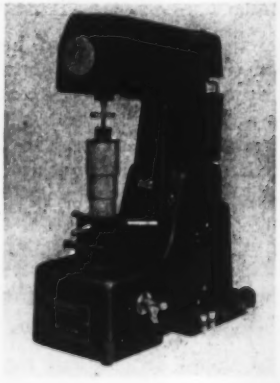
Electronically-controlled, variable-speed power elevation provides quick and precise measurements to 0.0001 inch. The machine combines a 5 and 8-inch capacity in one unit with easy changeover. A 6-inch diameter projection lens is applicable. Jones & Lamson Machine Co.

FOR MORE DATA CIRCLE RTPLY CARD NO. 9

Motorized Hardness Tester

. . . cycle is less than 2 seconds

Model Y Rockwell motorized hardness tester, semi-automatic in operation, has short test cycle to



permit increased number of Rockwell readings taken and recorded within a definite time period. The motor's function in the test cycle is to remove the major load. The cycle of major load operation is less than 2 seconds.

With its Set-O-Matic gage, it is no longer necessary to set the large hardness indicator pointer to

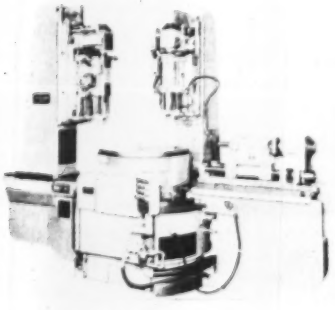
zero manually, because the pointer automatically will return to zero when the minor load is applied. Wilson Mechanical Instrument Division, American Chain & Cable Co. Inc.

FOR MORE DATA CIRCLE REPLY CARD NO. 10

Universal Drilling Machine

. . . provides basic unit

Hartford offers a versatile universal drilling machine which enables the user to create his own single-purpose machine. The unit



is designed to provide a standardized basic machine sufficiently accurate for aircraft parts and rigid enough to hold tolerances in heavy work. The fully-automatic machine accommodates up to four drilling or tapping units. All are quickly adjustable radially, vertically and circumferentially. It can be converted quickly to meet engineering changes and obsolescence of parts with but one original machine investment.

Air-hydraulic heads will drill up to ¾-inch holes in mild steel, ½-inch stainless with interchangeable index plates for equal or unequal hole patterns. Hartford Special Machinery Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 11

Metal Cleaner

. . . without metallic activators

Detrex 771 Paintbond cleaner was specifically designed for use in spray phosphate coating units where a fine-grained phosphate crystal is required. By accomplishing the activating process without resorting to metallic activators, the cleaner leaves the metal surface chemically clean and requires no surface seeding in the prephosphate coating stages.

Subsequent phosphate coatings are extremely fine grained, uniformly coated and result in lower chemical consumption. The cleaner is designed to prevent excessive foaming at elevated temperatures and pressures. Detrex Corp.

FOR MORE DATA CIRCLE REPLY CARD NO. 12

Small-Stamping Press

. . . has 2-ton capacity

A 2-ton capacity press, model No. 00 eliminates fatiguing operation of kick presses and manual punching and assembling operations. The model is ideal for small stampings, especially for single pieces. It is also excellent for secondary or assembly operations.

A single trip safety mechanism, standard equipment, can be

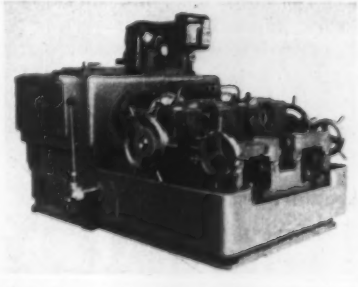
changed rapidly to continuous operation. Sales Service Machine Tool Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 13

Heavy-Duty Threader

. . . for reproduction threading

Model 48 C Landmaco threading machine has been developed for production threading of large diameter pipe and nipples. This



double spindle, heavy-duty machine has a 1 to 4-inch pipe range equipped with the 4-inch Lanco head; a 2½ to 6-inch pipe range if furnished with the 6 x 6-inch chaser.

Both the 4 and 6-inch threading heads are equipped with reamer and reamer attachment to ream, chamfer and thread the pipe in simultaneous operation. The model features 12 spindle speeds from 9 to 152 rpm which are available by use of three pairs of pick-off speed change gears. Landis Machine Co.

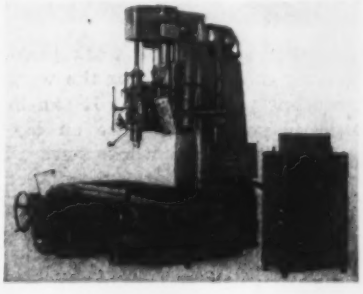
FOR MORE DATA CIRCLE REPLY CARD NO. 14

Jig Borer

. . . electronic feed control

The 3E jig borer is a 13-ton machine, designed for precision locating, boring, milling and checking. It's the latest of the Electrolimit series made by Pratt & Whitney.

The new unit has electronically-controlled milling feeds infinitely variable from 1 to 15 ipm. Rapid power travel of 60 ipm is also provided. There are eight selective spindle feeds ranging from 0.0005 to 0.015 inch per spindle revolution, both up or down. Twelve spindle speeds, from 30 to 1500 rpm, are provided through a gear box



and four-speed motor. Pratt & Whitney, division of Niles-Bement-Pond Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 15

Coating Material

. . . for spray equipment

CrysCoat SW, a zinc-phosphate coating material is used on iron and steel and is designed for use in pressure-spray washing equipment.

It provides a fine-grained, dense and uniform coating that meets U. S. Government specs JAN-C-490, Grade I; 57-O-2C, Type 2, Class C; and PA-PD-191, Rev. 1. It coats rapidly on metal surfaces;

the coating is fine-grained, dense and relatively nonporous. Solution is highly buffered for long life. Product is inhibited for safety on equipment. Oakite Products Inc.

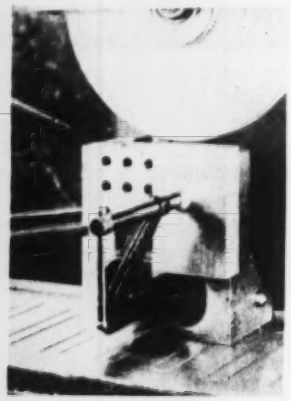
FOR MORE DATA CIRCLE REPLY CARD NO. 16

Angle Plate

. . . built-in recess

Using their Square Master angle plate, an apprentice can grind a work piece to exact squareness without need for using auxiliary tools.

It has built-in recess into which a C-clamp can fit while one side is being ground. It can then be turned over on its side to grind



the other side of the work piece. Neither the C-clamp nor the work piece has to be moved. It can be used to same advantage on layout and inspection work, since all working surfaces are guaranteed to within 0.0002 squareness. Federal Machine Tool Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 17

Grinding Wheel

. . . for abrasive resistants

A vitrified grinding wheel takes hard tool steels and other abrasive resistant materials in stride, according to its manufacturer.

It is a 7-inch diameter surface grinder wheel. The abrasive is said to cut high-carbon-vanadium-cobalt type steel ¼ inch deep and ½ inch wide in only two minutes feeding five to ten thousandths at a pass and operated at 3500 rpm dry. A special composition of aluminum oxide abrasive accounts for the special rugged characteristics. Electro Refractories & Abrasives Corp.

FOR MORE DATA CIRCLE REPLY CARD NO. 18

FREE LITERATURE

Catalogs and Clip Sheets

Reply card on page 113 will bring you free literature, editorial clips or more information on new products and equipment described or advertised in this issue

Protective Apparel

Surety Rubber Co.—Method of cataloging protective apparel is employed by Surety by which the company not only lists all such items it manufactures in a new bulletin, but also includes actual swatches of the materials in which they are available.

FOR A FREE COPY CIRCLE REPLY CARD NO. 19

Concrete Floors

Kalman Floor Co. — "Concrete Floors now . . . and for the Future" is a new 28-page booklet that describes Kalman's absorption process method of installation in a step-by-step pictorial sequence. Other facets of the company's work with concrete flooring are described and illustrated.

FOR A FREE COPY CIRCLE REPLY CARD NO. 20

Airfoil Milling Machine

Niles-Bement-Pond Co.—Pratt & Whitney Division offers an 8-page bulletin describing the Electronic Airfoil milling machine, model 102, manufactured by New England Machine & Tool Co. Available exclusively through Pratt & Whitney, the bulletin covers the machine's work in accurately producing first original 3-dimensional master forms, automatically interpolating from cross-sectional templates and from data on drawings, and its completely non-contacting tracer control.

FOR A FREE COPY CIRCLE REPLY CARD NO. 21

Steam Heating Systems

American Air Filter Co. Inc. —Illinois Engineering Co. Division offers a new condensed catalog describing five major types of steam heating systems, with and without control, and a full line of valves, traps and steam power specialties. Featured is Illinois' Selectotherm, an automatically-controlled high vacuum system that adjusts heat output and fuel consumption to outdoor temperature and heat loss conditions.

FOR A FREE COPY CIRCLE REPLY CARD NO. 22

Vibrating Equipment

Jeffrey Mfg. Co.—A 230-page catalog on Jeffrey-Traylor vibrating equipment covers the company's complete line of this equipment. Both electrical and mechanical vibration are fully treated as to principles of operation and application.

FOR A FREE COPY CIRCLE REPLY CARD NO. 23

Knuckle Joint Presses

E. W. Bliss Co.—A 24-page catalog covers the complete line of Bliss knuckle joint presses. With capacities from 75 to 10,000 tons, these presses are available in more than 40 standard sizes. Also illustrated and described are various types of Bliss clutches, plus such accessories as automatic feeds, standard dovetails and overload relief beds.

FOR A FREE COPY CIRCLE REPLY CARD NO. 24

Heat Treat Pots

American Brakeshoe Co.—Electro-Alloys Division has released a 6-page bulletin on heat treat pots. Included is a listing of all sizes available in the division's Thermalloy. Suggestions are advanced on how pot users may increase service life by proper installation and use.

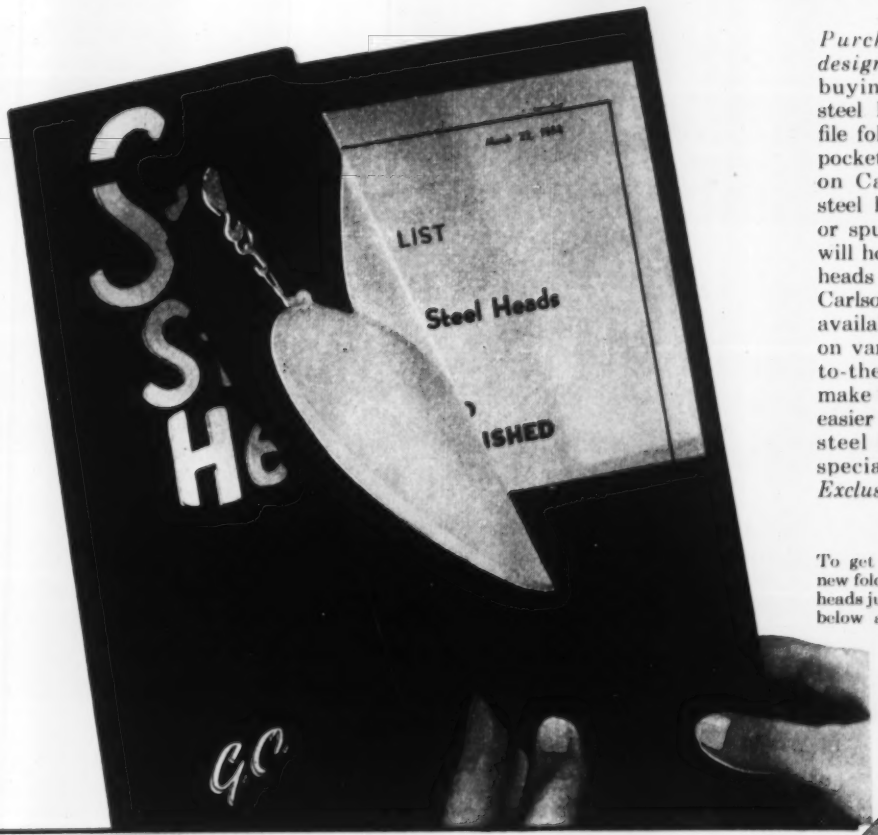
FOR A FREE COPY CIRCLE REPLY CARD NO. 25

Colloidal Dispersions

Acheson Colloids Co.—How 'dag' colloidal dispersions serve industry in a wide range of uses is treated thoroughly in a new catalog, bulle-

get your copy of this new folder on Stainless Steel Heads

...a G. O. CARLSON, INC. 1ST



Purchasing men, engineers, designers, estimators—anyone buying or specifying stainless steel heads will want this new file folder. In its four pages and pocket there's useful information on Carlson-produced stainless steel heads, either press formed or spun. And the handy pocket will hold the latest price lists for heads carried in stock by G. O. Carlson, Inc., plus a list of dies available for forming and data on various head styles. This up-to-the-minute information will make it easier to specify and easier to buy the finest stainless steel heads from a producer, specializing in *Stainless Steels Exclusively.*

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5 *CORFOAM–a foam material for tool core and model structures and high heat applications.*

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Rezolin, Inc.

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1 man . . . handles Sheet Steel *Faster, Easier* with a

C-F LIFTER

C-F Lifters, under one man operation, pick up, carry and unload more sheet steel tonnage per hour than any other method – and at lower cost per ton. Wide carrying angles hold sheets securely – won't damage high grade sheets; tong action insures safe carrying; fast opening and closing adjustments of Lifter jaws permit shifting from one size pack to another in seconds. C-F Lifters are made in standard or semi-special models to handle from 2 to 60 tons.

Write for Bulletin SL-28 for specific examples of C-F Lifter operation and economy.

CULLEN-FRIESTEDT CO.
1308 SOUTH KILBOURN AVENUE • CHICAGO 23, ILLINOIS

tin No. 460. A centerfold table lists 40 basic dispersions of graphite, molybdenum disulfide, vermiculite and zinc oxide. Comparative particle size and consistency of each dispersion are given, with dilution information and typical applications.

FOR A FREE COPY CIRCLE REPLY CARD NO. 26

Non-acid Rust Remover

Turco Products Inc.—A non-acid rust-removing material that simultaneously strips paint, rust and primer from ferrous metal surfaces is described in a 4-page brochure. Called Rustgon, the liquid alkaline material requires only two simple steps—dip and pressure rinse.

FOR A FREE COPY CIRCLE REPLY CARD NO. 27

Packing Data

E. F. Houghton & Co.—Six new technical bulletins, each featuring essential data on individual packing types, have been issued by Houghton. The company manufactures Vix-Syn synthetic rubber packings and VIM leather packings. Each bulletin contains information and standard sizes on one specific packing style.

FOR A FREE COPY CIRCLE REPLY CARD NO. 28

Unit Heaters

American Blower Corp.—Bulletin 7517, 44 pages, covers latest design of American Blower Venturafin unit heaters for steam or hot water applications. Information touches on design, general engineering data, capacity tables and piping diagrams.

FOR A FREE COPY CIRCLE REPLY CARD NO. 29

Goggle Valves

Salem-Brosius Inc.—Two types of goggle valves, the Brosius-Westling and the Brosius, are illustrated and described in a new 16-page catalog. Included are special designs of butterfly valves and a new standard line of gate valves. The catalog also shows engineering details.

FOR A FREE COPY CIRCLE REPLY CARD NO. 30

Blocks and Forgings

Skookum Co. Inc.—Complete line of general purpose blocks and forgings made by Skookum is described and illustrated in the company's new 86-page general catalog. All models, shown with complete specifications, are built with man-

USE A CARD

FREE CATALOGS and LITERATURE

NEW PRODUCT INFORMATION

INFORMATION ON ADVERTISED PRODUCTS

FREE EDITORIAL CLIP SHEETS

ganese steel sheaves, Timken bearings and patented bearing adjusting nut and lock.

FOR A FREE COPY CIRCLE REPLY CARD NO. 31

Chain Drives

Morse Chain Co.—A revised 16-page illustrated catalog includes new and expanded data on capacity ratings of Morse HyVo high speed, heavy-duty chain drives. Operating principles and test data are included for drives that carry up to 190-hp per inch of chain width at continuous chain speed up to 6000 fpm.

FOR A FREE COPY CIRCLE REPLY CARD NO. 32

AC Crane Controls

General Electric Co.—A redesigned and expanded line of ac crane controls with less than half as much enclosure depth and improved maintenance and installation features, has been announced by GE's Industry Control Department. The new line enables bridges to be made smaller, reduces overhead clearance. Complete description is available in bulletin GEA-6112.

FOR A FREE COPY CIRCLE REPLY CARD NO. 33

Special Cutting Tool

Spiral Step Tool Co.—A 12-page catalog shows Spiral's capacity for producing special cutting and forming tools. The publication describes and pictures production facilities and control, and shows examples of the work on special jobs that the company is capable of performing.

FOR A FREE COPY CIRCLE REPLY CARD NO. 34

Liquid Drives

Liquid Drive Corp. — Bulletin 7020A describes the Nelson Power Mate liquid drives (water operated). The Nelson cap-end drive is a hydrokinetic means of power transmission and a means by which driven machine speed may be controlled and varied.

FOR A FREE COPY CIRCLE REPLY CARD NO. 35

Two-Pole Motors

Allis-Chalmers Mfg. Co.—Design of Allis-Chalmers' two-pole motors, 900 hp and larger, is described in a new 8-page bulletin. Diagrams include a sectional view of typical large two-pole squirrel-cage induction motor, and another showing how the machine is spirally ventilated.

FOR A FREE COPY CIRCLE REPLY CARD NO. 36

Industrial Rubber Catalog

Raybestos-Manhattan Inc.—Manhattan Rubber Products Division has published a new edition of its catalog of rubber products for industry. The catalog is well illustrated; condensed copy is organized for rapid reference.

FOR A FREE COPY CIRCLE REPLY CARD NO. 37

Steel Construction

Pittsburgh - Des Moines Steel Co. — Steel construction is the subject of a new 4-page bulletin, which outlines the company's complete service — including design, fabrication, erection and rebuilding. Featured are illustrations of a variety of types of structures produced by the company.

FOR A FREE COPY CIRCLE REPLY CARD NO. 38

Degreaser Operating Methods

Manufacturers Processing Co.—"Vapor Degreasing Do's and Dont's" shows proper and improper degreaser operating methods and treats the subject of vapor degreasing with brief text and a profusion of illustrations. The literature covers every phase of metal cleaning through vapor de-

For free literature, editorial clips or more information on products described in this section, circle the corresponding number at left. Fill in box below for articles or advertisements not numbered.

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6	16	26	36	46	56	66	76	86
7	17	27	37	47	57	67	77	87
8	18	28	38	48	58	68	78	88
9	19	29	39	49	59	69	79	89
10	20	30	40	50	60	70	80	90

8-2-54

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Cold Cathode Lighting

Celine Inc. — Two catalogs are offered which explain cold cathode lighting in general and Celine and its products in particular in a non-technical manner. Advantages are covered. File 31-F-21 covers the type of lighting in general. File 31°-F-21 covers the industrial application of cold cathode in units or in rows.

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Dragline Trailers

Lewis-Shepard Products Inc.—A circular describes L-S Floormaster dragline trucks for both in-floor and overhead conveyor lines. Details of construction, engineering highlights and installation photographs are included with complete specifications on various models available.

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Process Meters, Controls

Bailey Meter Co.—Instrumentation for the modern process plant is presented in the new 16-page, 1954 edition of Bailey Meter's bulletin 17. Detailed equipment descriptions and illustrations include basic specifications for measuring, transmitting, receiving, interpreting and controlling 18 variables normally encountered in production processes.

FOR A FREE COPY CIRCLE REPLY CARD NO. 42

3-Dimensional Cam

Parker Stamp Works Inc.—An 8-page folder describes in detail the evolution of the super "nerve center" 3-dimensional cam. The folder gives complete engineering and production data on a 3-dimensional cam which has 720 exact stations on 1 sq. in. of surface.

FOR A FREE COPY CIRCLE REPLY CARD NO. 43

Diamond Grinding Wheels

Action Diamond Tool Co.—A 44-page catalog describes Action's complete line of Jetaline and Ro-Bot Resin diamond grinding wheels. The former, used with a coolant, will cut in carbides depths up to 1/8-inch in a single pass. Also described is a complete line of diamond dressers.

FOR A FREE COPY CIRCLE REPLY CARD NO. 44

Filter Press Specs

D. R. Sperry & Co.—Sperry's revised filter press catalog and specification book is a complete source of current information about industrial filtration equipment and methods. Prepared more as a text and reference manual than as a selling brochure, it contains classified sections devoted to full discussions on the nomenclature of the plate filter type press.

FOR A FREE COPY CIRCLE REPLY CARD NO. 45

EDITORIAL REPRINTS:

Are You in Step?

How do your inventories of steel, copper and aluminum compare with those of other metalworking companies? Are you getting the same speed in delivery that other firms command? STEEL's quarterly survey of the inventory and delivery situation in the three major metals, on p. 47, can help you determine if you're in step.

FOR A FREE COPY CIRCLE REPLY CARD NO. 46

Plastic Dies

Dies used for development work, prototypes and short runs are cast or molded to desired shape. Time for toolup is shortened because much machining is bypassed. Associate Editor Harry Chandler's roundup of plastic die development begins on p. 84.

FOR A FREE COPY CIRCLE REPLY CARD NO. 47

Hi-Temperature Alloy

Preliminary oxidation and stress rupture tests prove this nonstrategic alloy equal or superior to known alloys for high-temperature use. STEEL's report on this and other desirable properties that broaden its potential is found on p. 88.

FOR A FREE COPY CIRCLE REPLY CARD NO. 48

Platers Report

Electroplaters talk special baths for engineering plating, discuss copper and alloy deposits as substitutes for scarce nickel in undercoats. Technical Editor Allen Gray summarizes these and other developments to come out of the AES sessions in New York on p. 100.

FOR A FREE COPY CIRCLE REPLY CARD NO. 49

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1	11	21	31	41	51	61	71	81
2	12	22	32	42	52	62	72	82
3	13	23	33	43	53	63	73	83
4	14	24	34	44	54	64	74	84
5	15	25	35	45	55	65	75	85
6	16	26	36	46	56	66	76	86
7	17	27	37	47	57	67	77	87
8	18	28	38	48	58	68	78	88
9	19	29	39	49	59	69	79	89
10	20	30	40	50	60	70	80	90

8-2-54

For free literature, editorial clips or more information on products described in this section, circle the corresponding number at left. Fill in box below for articles or advertisements not numbered.

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STEEL
August 2, 1954

Market Outlook

STEELMAKERS are counting on a 5-to-10-per-cent rise in demand over coming weeks to pull the market out of its summer lethargy. While they have just about written off August as a recovery month, they think volume during the month will slightly better that of July, seen as the low point for the year. Genuine revival, however, now is not anticipated before September, possibly October, with prewar seasonal market patterns increasingly in evidence.

SENTIMENT MIXED—Views on market prospects differ widely. At best, trade authorities are only cautiously optimistic for fourth quarter. Most base hopes for a substantial buying pickup on low consumer inventories, anticipated spurt in automotive needs following model changeovers, continued strong demand from the construction industries and quickening activity in general metalworking as confidence returns.

SKEPTICS UNCERTAIN—But there are many experts less sure there will be much pickup this fall. They see some buying gains, but, they ask: Where is real improvement coming from among larger consuming industries? Not the railroads, they say. Nor the railroad car builders and probably not automobiles with the retail selling season past peak. Tin plate demand is seen less pressing with stocks large. Also slackening in oil refining may have an impact on steel requirements and, while construction needs are seen holding up, they are not expected to increase.

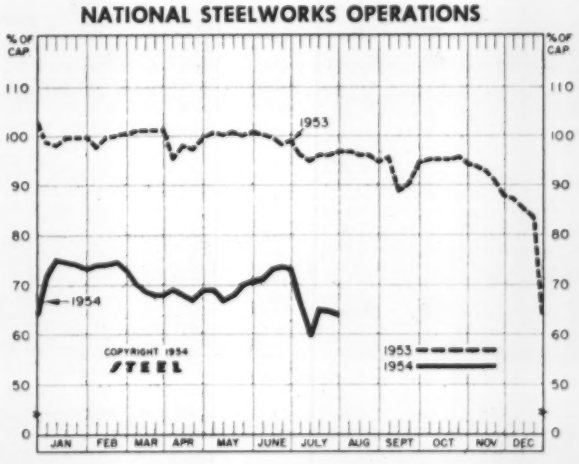
PRICES FIRM—One of the most encouraging things about today's market situation is the way the recent price increases on the various steel products appear to have been accepted by consumers. So far as can be determined no serious resistance to the advances has yet developed. Such may come later, however, when fall buying campaigns get under way and market influences come into full play. Meanwhile, steelmakers, including the smaller interests, have just about completed adjustments in their price schedules. STEEL's arithmetical index on finished steel products now stands at $117.43, comparing with $113.70 at the beginning of July.

SIGNIFICANT MOVE—Particularly significant in the market at this time is an upswing in prices on imported steel. Imports have been bothersome to warehouse operators over the past year or so, importers offering material considerably under domestic market levels. Now, it would appear, such stiff competition may be fading. Reflecting boom times in Europe, prices have been raised on a number of items.

SCRAP EXPORTS—Providing confirmation to reported boom in steel abroad, scrap is moving from this country to European mills in what appears to be rising volume. Export business is enlivening the scrap market in the East, the trade estimating that more than 100,000 tons are being shipped abroad from ports on the eastern seaboard. Most of this scrap is moving to European countries that only a few months ago were shipping scrap here.

PRODUCTION—Reflecting the continued sluggishness of summer demand, the national steel ingot rate eased another ½ point last week to 64 per cent of capacity. This is equivalent to production of about 1,525,000 net tons.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged)

	Week Ended Aug. 1	Change	Same Week 1953	Same Week 1952
Pittsburgh	61.5	+ 2*	95.5	35.5
Chicago	65.5	— 4*	90	53
Mid-Atlantic	57	— 1	97.5	43.5
Youngstown	64	+ 4	105	45
Wheeling	76	— 7	99	47.5
Cleveland	66.5	+ 0.5*	102	40.6
Buffalo	56	0	106.5	51
Birmingham	75	0	100	15
New England	55	+12	89	53
Cincinnati	55	— 0.5	90.5	55
St. Louis	47.5	— 6.5	93	96.5
Detroit	54.5	—15.5	102	73
Western	82	+ 2	107.5	36
National Rate	64	— 0.5	96.5	43

INGOT PRODUCTION‡

	Week Ended Aug. 1	Week Ago	Month Ago	Year Ago
INDEX (1947-1949=100)	95.7†	96.9	97.6	129.9
NET TONS (In thousands)	1,538†	1,557	1,568	2,087

*Change from preceding week's revised rate. †Estimated. ‡Amer. Iron & Steel Institute. Weekly capacity (net tons): 2,384,549 in 1954; 2,254,459 in 1953; 2,077,040 in 1952.

The Metalworking Outlook—p. 39 Technical Outlook—p. 83

PRICE INDEXES AND COMPOSITES

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics) Week Ended July 27

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them write to STEEL.

Rails, standard, No. 1	$4.525	Bars, H.R., alloy	8.783	Strip, C.R., stainless, 430 (lb)	$0.415	Tin plate, hot-dipped, 1.25 lb	$8.433
Rails, light, 40 lb	5.917	Bars, H.R., stainless, 303 (lb)	0.418	Strip, H.R., carbon	5.088	Tin plate, electrolytic, 0.25 lb	7.133
Tie Plates	5.275	Bars, H.R., carbon	5.021	Pipe, black, buttweld (100 ft)	15.000	Black plate, can making quality	6.233
Axles, railway	7.500	Bars, reinforcing	5.058	Pipe, galv., buttweld (100 ft)	18.310	Wire, drawn, carbon	7.938
Wheels, freight car, 33 in. (per wheel)	48.500	Bars, C.F., carbon	8.174	Pipe line (100 ft)	146.804	Wire, drawn, stainless, 430 (lb)	0.545
Plates, carbon	4.675	Bars, C.F., alloy	11.285	Casing, oil well, carbon (100 ft)	154.216	Bale ties (bundle)	5.860
Structural Shapes	4.517	Bars, C.F., stainless, 302 (lb)	0.433	Casing, oil well, alloy (100 ft)	227.875	Nails, wire, 8d common	7.815
Bars, tool steel, carbon (lb)	0.430	Sheets, H.R., carbon	4.880	Tubes, boiler (100 ft)	‡	Wire, barbed (80-rod spool)	7.109
Bars, tool steel, alloy, oil hardening die (lb)	0.525	Sheets, C.R., carbon	5.871	Tubing, mechanical, carbon	‡	Woven wire fence (20-rod roll)	16.815
Bars, tool steel, H.R., alloy, high speed W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.115	Sheets, galvanized	7.140	Tubing, mechanical, stainless, 304 (100 ft)	161.193		
Bars, tool steel, H.R., alloy, high speed W 18, Cr 4, V 1 (lb)	1.610	Sheets, C.R., stainless, 302 (lb)	0.548				
		Sheets, electrical	9.350				
		Strip, C.R., carbon	7.507				

‡ Not available.

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

	July 27 1954	July20 1954	Month Ago	July Average
(1947-1949=100)	144.5	144.6	140.9	144.5

STEEL's FINISHED STEEL PRICE INDEX*

	July 28 1954	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	195.87	195.87	189.75	189.38	152.90
Index in cents per lb.	5.306	5.306	5.140	5.130	4.142

STEEL's ARITHMETICAL PRICE COMPOSITES

	July 28 1954	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Finished Steel, NT*	$117.43	$117.43	$113.20	$115.56	$91.82
No. 2 Fdry, Pig Iron, GT	56.54	56.54	56.54	56.54	46.07
Basic Pig Iron, GT	56.04	56.04	56.04	56.04	45.60
Malleable Pig Iron, GT	57.27	57.27	57.27	57.27	47.27
Steelmaking Scrap, GT	27.33	27.33	27.83	43.92	19.34

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.
†Preliminary

COMPARISON OF PRICES

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	July 28 1954	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	4.30	4.30	4.15	4.15	3.35
Bars, H.R., Chicago	4.30	4.30	4.15	4.15	3.35
Bars, H.R., del. Philadelphia	4.55	4.55	4.405	5.302	3.816
Bars, C.F., Pittsburgh	5.40	5.40	5.20	5.20	3.95
Shapes, Std., Pittsburgh	4.25	4.25	4.10	4.10	3.25
Shapes, Std., Chicago	4.25	4.25	4.10	4.10	3.25
Shapes, del., Philadelphia	4.53	4.53	4.38	4.38	3.492
Plates, Pittsburgh	4.225	4.225	4.10	4.10	3.40
Plates, Chicago	4.225	4.225	4.10	4.10	3.40
Plates, Coatesville, Pa.	4.225	4.225	4.10	4.35	3.50
Plates, Sparrows Point, Md.	4.225	4.225	4.10	4.10	3.40
Plates, Claymont, Del.	4.225	4.225	4.10	4.55	3.50
Sheets, H.R., Pittsburgh	4.05	4.05	3.925	3.925	3.25
Sheets, H.R., Chicago	4.05	4.05	3.925	3.925	3.25
Sheets, C.R., Pittsburgh	4.95	4.95	4.775	4.775	4.00
Sheets, C.R., Chicago	4.95	4.95	4.775	4.775	4.00
Sheets, C.R., Detroit	5.10	5.10	4.975	4.975	4.20
Sheets, Galv., Pittsburgh	5.45	5.45	5.275	5.275	4.40
Strip, H.R., Pitts.	4.425	4.425	4.425	3.975-4.425	3.25
Strip, H.R., Chicago	4.05	4.05	3.925	3.925	3.25
Strip, C.R., Pittsburgh	5.75	5.75	5.45	5.45-5.95	4.375
Strip, C.R., Chicago	6.00	6.00	5.70	5.70	4.00
Strip, C.R., Detroit	5.60-5.90	5.60-5.90	5.65	5.45-6.05	4.20
Wire, Basic, Pitts.	5.75	5.75	5.525	5.475-5.525	4.15
Nails, Wire, Pittsburgh	6.85	6.85	6.55	6.35-6.55	5.15
Tin plate (1.50 lb), box, Pitts.	$8.95	$8.95	$8.95	$8.95	$7.75

SEMIFINISHED STEEL					
Billets, forging, Pitts. (NT)	$78.00	$78.00	$75.50	$70.50	$61.00
Wire rods, ⅜-⅝" Pitts.	4.675	4.675	4.525	4.525	3.40

PIG IRON, Gross Ton	July 28 1954	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bessemer, Pitts.	$57.00	$57.00	$57.00	$57.00	$47.00
Basic, Valley	56.00	56.00	56.00	56.00	46.00
Basic, deld. Phila.	59.66	59.66	59.66	60.75	49.39
No. 2 Fdry, Pitts.	56.50	56.50	56.50	56.50	46.50
No. 2 Fdry, Chicago	56.50	56.50	56.50	56.50	46.50
No. 2 Fdry, Valley	56.50	56.50	56.50	56.50	46.50
No. 2 Fdry, del. Phila.	60.16	60.16	60.16	61.25	49.89
No. 2 Fdry, Birm.	52.88	52.88	52.88	52.88	39.38
No. 2 Fdry (Birm.) del. Cin.	60.43	60.43	60.43	60.43	45.43
Malleable, Valley	56.50	56.50	56.50	56.50	46.50
Malleable, Chicago	56.50	56.50	56.50	56.50	46.50
Ferromanganese, Duquesne	200.00†	200.00†	200.00†	200.00†	175.00*

*75-82% Mn, gross ton, Etna, Pa. †74-76% Mn, net ton.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pitts.	$28.50	$28.50	$29.50	$44.50	$21.00
No. 1 Heavy Melt, E. Pa.	24.50	24.50	23.00	44.25	17.50
No. 1 Heavy Melt, Chicago	29.00	29.00	31.00	43.50	19.50
No. 1 Heavy Melt, Valley	26.50	26.50	27.50	45.50	18.50
No. 1 Heavy Melt, Cleve.	24.50	24.50	26.50	45.50	15.00
No. 1 Heavy Melt, Buffalo	26.50	26.50	26.50	43.75	20.25
Rails, Rerolling, Chicago	43.50	43.50	42.50	55.50	27.75
No. 1 Cast, Chicago	35.50	35.50	36.00	41.00	29.50

COKE, Net Ton

Beehive, Furn, Connlsvl.	$14.75	$14.75	$14.75	$14.75	$13.25
Beehive, Fdry, Connlsvl.	16.75	16.75	16.75	16.75	15.75
Oven Fdry, Chicago	24.50	24.50	24.50	24.50	20.00

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

PRIMARY METALS AND ALLOYS

Aluminum: 99+ %, ingots 21.50, pigs 20.00 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 12% Si, 23.30; No. 13, 5% Si, 23.10; No. 142, 4% Cu, 24.40; No. 195, 4.5% Cu, 0.8% Si, 23.70; No. 214, 3.8% Mg, 24.40; No. 356, 7% Si, 0.3% Mg, 23.20.

Antimony: R.M.M. brand, 99.5% 28.50, Lone Star brand, 29.00, f.o.b. Laredo, Texas, in bulk. Foreign brands, 99.5%, 27.50-28.00 New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, $71.50 per lb f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $72.75 per lb of contained Be, f.o.b. Reading, Pa.

Beryllium Copper: 3.75-4.25% Be, $40.00 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. Reading, Pa. or Elmore, O.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.70 per lb del.

Cobalt: 97-99%, $2.60 per lb for 550 lb keg; $2.62 per lb for 100 lb case; $2.67 per lb under 100 lb.

Columbium: Powder, $75.00 per lb, nom.

Copper: Electrolytic 30.00 del. Conn. Valley, 30.125 del. Midwest; Lake 30.00 del; Fire refined 29.75 del.

Germanium: 99.9%, $295 per lb, nom.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $145-$150 per troy oz.

Lead: Common 13.80, chemical 13.90, corroding 13.90, St. Louis; N.Y. basis, add 0.20.

Lithium: 98%, $11-$14 per lb, depending on quantity.

Magnesium: 99.8%, self-palletizing pig 27.00; notched ingot 27.75, 10,000 lb or more, f.o.b. Freeport, Tex. For Port Newark, N. J., and Madison, Ill., add 1.20 for pig and 1.25 for ingot. Sticks, 1.3 in. diameter, 46.00, 100 to 4999 lb, f.o.b. Madison, Ill.

Magnesium Alloys: AZ91C and alloys C, H, G and R 32.50; alloy M 34.50, 10,000 lb or more f.o.b. Freeport, Tex., or Madison, Ill. Add 1.20 for Port Newark, N. J.

Mercury: Open market, spot, New York, $285-$290, nom., per 76-lb flask.

Molybdenum: Powder 99% hydrogen reduced $3.40 per lb; pressed ingot $4.06 per lb; sintered ingot $5.53 per lb.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked 60.00; 25-lb pigs 62.65; "XX" nickel shot 63.65; "F" nickel shot or ingots for addition to cast iron, 60.00; prices

DAILY NONFERROUS PRICE RECORD

	Price July 28	Last Change	Previous Price	June Avg.	May Avg.	July 1953 Avg.
Copper	30.00	Apr. 12	29.75-30.00	30.000	30.000	29.846
Lead	13.80	June 15	14.05	13.906	13.800	13.483
Zinc	11.00	June 3	10.50	10.923	10.290	11.000
Tin	96.00	July 28	96.125	94.178	93.600	81.577
Nickel	60.00	Jan. 14, 1953	56.50	60.000	60.000	60.000
Aluminum	21.50	July 15, 1953	20.50	21.500	21.500	20.923
Magnesium	27.00	Mar. 9, 1953	24.50	27.000	27.000	27.000

Quotations in cents per pound based on: Copper, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Nickel, electrolytic cathodes, 99.9%, base size at refinery unpacked; Aluminum, primary ingots, 99 + %, del.; Magnesium 99.8%, Freeport, Tex.

f.o.b. Port Colborne, Ont., including import duty. New York basis, add 0.92.

Osmium. $140-$150 per troy oz nom.

Palladium: $21 per troy oz.

Platinum: $84-$87 per troy oz from refineries.

Radium: $16-$21.50 per mg radium content, depending on quantity.

Rhodium: $125 per troy oz.

Ruthenium: $75-$80 per troy oz.

Selenium: 99.5%, $5-$6 per lb.

Sodium: 16.50, carlots; 17.00 l.c.l.

Tantalum: Sheet, rod $39.00 per lb; powder $33.50 per lb.

Tellurium: $1.75 per lb.

Thallium: $12.50 per lb.

Tin: Straits, N. Y., spot and prompt, 96.00.

Titanium: Sponge, 99.3+%, grade A-1 ductile (0.3% Fe max.) $4.72; grade A-2 (0.5% Fe max) $4.46 per pound.

Tungsten: Powder, 98.8%, carbon reduced, 1000 lb lots $4.95 per lb, f.o.b. shipping point; less than 1000 lb $5.10; 99+% hydrogen reduced, $4.65. Treated ingots $6.70.

Zinc: Prime Western 11.00, brass special 11.25, intermediate 11.50, E. St. Louis, freight allowed over 0.50 per pound. High grade 12.35, special high grade 12.50, die casting alloy ingot 15.00, del.

Zirconium: Sponge $10 per lb; powder electronics grade $15, flash grade $11.50.
(Note: Chromium, manganese and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingots: Piston Alloy 20.00-20.50; No. 12 foundry alloy (No. 2 grade) 19.25-19.75; 5% silicon alloy, 0.60 Cu max., 22.25-22.50; 13 alloy, 0.60 Cu max., 22.25-22.50; 195 alloy 21.00-21.50; 108 alloy 19.75-20.25; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 20.50-21.00; grade 2, 19.50-20.00; grade 3, 18.50-19.00; grade 4, 17.50-18.00.

Brass Ingot: Red brass, No. 115, 27.00; tin bronze No. 225, 39.00; No. 245, 33.25; high-leaded tin bronze, No. 305, 31.50; No. 1 yellow, No. 405, 23.25; manganese bronze No. 421, 26.75.

Magnesium Alloy Ingot: AZ63A, 31.50; AZ91B, 27.00; AZ91C, 31.50; AZ92A, 31.50.

NONFERROUS MILL PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras 2000 to 5000 lb, f.o.b. Temple, Pa.; nominal 1.9% Be alloy) Strip, $1.68; rod, bar, wire, $1.65.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 35.36; 30,000 lb lots, 35.48; l.c.l. 35.98. Weatherproof, 100,000 lb, 36.28; 30,000 lb, 36.53; l.c.l. 37.03. Magnet wire del., 15,000 lb or more 41.83; l.c.l. 42.58.

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more $19.00 per cwt; pipe, full coils $19.00 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $11; forging billets $6; hot-rolled and forged bars, $6.

ZINC

(Prices per lb c.l., f.o.b. mill) Sheets 23.00, ribbon zinc in coils, 18.50-20.50; plates 18.00-22.25.

ZIRCONIUM

Plate $27; H.R. strip $28; C. R. strip $35; forged or H.R. bars $27; wire, 0.015 in., 1 cent per linear foot.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheet, C.R.	86.5	67.5	92.5
Strip, C.R.	92.5	70.5	98.5
Plate, H.R.	84.5	66.5	90.5
Rod, Shapes	82.5	65.5	88.5
Seamless Tubes	115.5	100.5	137.5
Shot, Blocks	60.0		

ALUMINUM

(30,000 lb base; freight allowed over 499 lb) Sheets and Circles: 2S and 3S mill finish c.l.

Thickness Range Inches	Widths or Diameters, In., Inc.	Flat Sheet*	Coiled Sheet	Coiled Sheet Circle†
0.249-0.136	12-49	33.9	...	...
0.135-0.096	12-48	34.4	...	...
0.095-0.077	12-48	35.1	32.7	37.5
0.076-0.061	12-48	35.7	32.9	37.7
0.060-0.048	12-48	36.1	33.2	38.1
0.047-0.038	12-48	36.6	33.6	38.4
0.037-0.030	12-48	37.0	34.0	39.1
0.029-0.024	12-48	37.6	34.3	39.6
0.023-0.019	12-36	38.3	35.1	40.4
0.018-0.017	12-36	39.1	35.7	41.3
0.016-0.015	12-36	40.0	36.5	42.5
0.014	12-24	41.0	37.5	43.8
0.013-0.012	12-24	42.1	38.2	44.8
0.011	12-24	43.1	39.4	46.4
0.010-0.0095	12-24	44.3	40.5	48.0
0.009-0.0085	12-24	45.6	41.9	50.0
0.008-0.0075	12-24	47.1	43.1	51.8
0.007	12-18	48.6	44.6	54.1
0.006	12-18	50.2	46.0	59.1

* 72-180 in. lengths. †26 in. max. dia.

ALUMINUM

Plates and Circles: Thickness 0.250-3.0 in., 24-60 in. width or dia., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
2S-F, 3S-F	32.4	36.3
50S-F	33.5	37.4
4S-F	34.5	39.1
52S-F	36.2	40.9
61S-T6	37.4	41.5
24S-T4*	39.3	45.4
75S-T6*	47.1	53.7

*24-48 in. widths or dia., 72-180 in. lengths.

ALUMINUM

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or across flats	Round 11S-T3	Round 17S-T4	Hexagonal 11S-T3	Hexagonal 17S-T4
Drawn				
0.125	59.6	57.9	...	...
0.156-0.172	50.6	48.9	...	...
0.188	50.6	48.9	...	62.4
0.219-0.234	47.9	46.2	...	...
0.250-0.281	47.9	46.2	...	59.5
0.313	47.9	46.2	...	56.8
Cold-finished				
0.375-0.531	46.6	44.9	56.2	53.4
0.563-0.688	46.6	44.9	53.4	50.2
0.750-1.000	45.5	43.8	48.9	47.3
1.063	45.5	43.8	...	45.7
1.125-1.500	43.8	42.1	47.3	45.7
Rolled				
1.563	42.7	41.0	...	...
1.625-2.000	42.1	40.4	...	44.1
2.125-2.500	41.1	39.4	...	...
2.750-3.375	39.9	38.2	...	...

ALUMINUM

Forging Stock: Round, Class 1, 43.8-34.4, in specific lengths 36-144 in., diameters 0.375-8 in.; rectangles and squares, Class 1, 50.2-38.4 in random lengths 0.375-4.0 in. thick, widths 0.750-10.0 in.

Pipe: A.S.A. Schedule 40, alloy 63S-T6, 20 ft length, plain ends, 90,000 lb base, per 100 ft.

Nom. pipe size, in.		Nom. pipe size, in.	
¾	$15.05	2	$ 46.30
1	23.65	4	127.70
1¼	32.00	6	228.50
1½	38.25	8	343.80

MAGNESIUM

Sheet: AZ31, commercial grade, 0.032-in. 94.00, 0.064-in. 73.00, 0.125-in. 60.00, 30,000 lb and over, f.o.b. mill.

Plate: Hot rolled AZ31, 53.00, 20,000 lb or more 0.250-in. and over, widths to 48 in., lengths to 144 in.; raised pattern floor plate, 59.00, 20,000 lb or more, ¼-in. thick, widths 24-72 in., lengths 60-192 in.

Extrusion Stock: AZ31, Rectangles, ¼ x 2 in. 69.20, 1 x 4 in. 63.00. Rod, 1 in. 66.00, 2 in. 62.50. Tubing, 1 in. OD x 0.065-in., 87.00. Angles, 1 x 1 x ⅛-in. 72.90, 2 x 2 x ⅛-in. 67.00. Channels, 5 in. 67.80. I-Beams, 5 in. 66.20.

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES f		
	Sheet, Strip, Plate	Rod	Seamless Wire	Seamless Tube	Clean Heavy	Rod Ends	Clean Turnings
Copper	48.38b	45.98c	....	48.44	26.000	26.000	25.250
Yellow Brass	41.72	34.50d	42.26	44.63	19.750	19.500	18.000
Red Brass, 85%	45.44	45.38	45.98	48.25	23.000	22.750	22.250
Low Brass, 80%	44.47	44.41	45.01	47.28	22.125	21.875	21.375
Naval Brass	45.76	40.07	52.82	48.92	18.250	18.000	17.500
Commercial Bronze, 90%	46.95	46.89	47.49	49.51	23.875	23.625	23.125
Nickel Silver, 10%	53.36	59.43g	57.69	....	23.625	23.375	11.813
Phosphor Bronze, A, 5%	66.58	67.08	67.08	68.23	26.125	25.875	24.875
Silicon Bronze	52.71	51.90	52.75	70.11e	25.125	24.875	24.125
Manganese Bronze	49.48	43.62	54.06	....	18.250	18.000	17.500
Muntz Metal	43.96	39.77	....	....	18.625	18.375	17.875

a. Cents per lb f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 pounds, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb. g. Leaded.

NONFERROUS SCRAP

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Aluminum: 2S clippings 13.00; low copper clippings 13.00; mixed clippings 11.00; old sheet 10.00; borings and turnings 6.00; pistons and struts 7.50; crankcases 10.00; industrial castings 10.00.

Copper and Brass: Heavy copper and wire, No. 1 24.50-25.00; No. 2 copper 23.00-23.25; light copper 21.00-21.25; No. 1 composition red brass 19.00-19.50; No. 1 composition turnings 18.50-19.00; mixed brass turnings 11.50-12.00; new brass clippings 18.00; No. 1 brass rod turnings 15.00; light brass 11.50-12.00; heavy yellow brass 14.00; new brass rod ends 16.00; auto radiators, unsweated 15.00; cocks and faucets 16.00-16.50; brass pipe 16.50-17.00.

Lead: Heavy 11.00-11.25; battery plate 5.75-6.00; linotype and stereotype 13.00; electrotype 11.50; mixed babbitt 12.00-12.50.

Magnesium: Clippings 18.50-19.50; clean castings 17.50-18.50; iron castings, not over 10% removable Fe, 16.50-17.50.

Monel: Clippings 23.00-25.00; old sheet 21.00-23.00; turnings 16.00-18.00; rods 23.00-25.00.

Nickel: Sheets and clips 60.00-65.00; rolled anodes 60.00-65.00; turnings 40.00; rod ends 60.00-65.00.

Tin: No. 1 pewter 55.00-60.00; block tin pipe 75.00-80.00; No. 1 babbitt 50.00.

Zinc: Old zinc, 4.75-5.00; new die cast scrap, 4.50-4.75; old die cast scrap, 3.00-3.25.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Aluminum: 2S, 3S clippings 15.25-15.75; 51S, 52S clippings 15.00-15.50; 14S, 17S, 24S clippings 14.25-14.50; mixed clippings 14.00-14.50; old sheet 13.00-13.50; old cast 13.00-13.50; clean old cable, free of steel 15.00-15.50; borings and turnings 13.25-13.75.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 42.00; light scrap 37.00.

Copper Brass: No. 1 copper 27.00; No. 2 copper 25.50; light copper 24.00; refinery brass (60% copper) per dry copper content 23.00.

INGOTMAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

Copper, Brass: No. 1 copper 26.75-27.00; No. 2 copper 25.00-25.25; light copper 23.50-23.75; No. 1 composition borings 20.50; No. 1 composition solids 21.00-21.50; heavy yellow brass solids 17.00; yellow brass turnings 16.00; radiators 17.75-18.00.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes $1.70 per lb.

Copper: Flat-rolled 45.04, oval 44.54, 2000-5000 lb; electrodeposited 39.78, cast 42.04, 5000-10,000 lb lots.

Nickel: Depolarized, less than 500 lb 92.00; 500-4999 lb 88.00; over 5000 lb 86.00.

Tin: Bar or slab, less than 200 lb $1.145; 200-499 lb $1.13; 500-999 lb $1.125; 1000 lb or more $1.12.

Zinc: Bar 18.50, bar or flat top 17.50 ton lots.

CHEMICALS

Cadmium Oxide: $2.15 per lb, in 100 lb drums.

Chromic Acid: Less than 10,000 lb 28.50; over 10,000 lb 27.50.

Copper Cyanide: Under 1000 lb 63.90, 1000 lb and over 61.90.

Copper Sulphate: 100-6000 lb 11.35; 6000-12,000 lb 11.10; 12,000-24,000 lb 10.85; 24,000-36,000 lb 10.60; 36,000 lb and over 10.35.

Nickel Chloride: 100 lb 45.00; 200 lb 43.00; 300 lb 42.00; 400-4900 lb 40.00; 5000-9900 lb 38.00; 10,000 lb and over 37.00.

Nickel Sulphate: 100 lb 37.00; 200 lb 35.00; 300 lb 34.00; 400-4900 lb 32.00; 5000-35,000 lb 30.00; 36,000 lb and over 29.00.

Silver Cyanide: Cents per ounce, 16 oz 80.625; 100 oz 78.50; 25,000 oz and over 77.325.

Sodium Cyanide: Egg, under 1000 lb 19.80; 1000-19,900 lb 18.80; 20,000 lb and over 17.80; granular, add 1-cent premium to above.

Sodium Stannate: Less than 100 lb 72.5; 100-600 lb 58.1; 700-1900 lb 55.7; 2000-9900 lb 53.9; 10,000 lb or more 52.8.

Stannous Chloride: (Anhydrous): Less than 50 lb $1.588; 50 lb $1.248; 100-300 lb $1.098; 400-900 lb $1.074; 1000-1900 lb $1.049; 2000-4900 lb $1.013; 50000-19,000 lb 95.2; 20,000 lb and over 89.1.

Stannous Sulphate: Less than 5 lb $1.287; 50 lb 98.7; 100-1900 lb 96.7; 2000 lb and over 94.7

Zinc Cyanide: Under 1000 lb 54.30, 1000 lb and over 52.30.

Nonferrous Metals

The spotlight's on labor in nonferrous markets. Major strikes are unlikely, but developments will affect some prices and timing of orders

LABOR developments threaten to disturb the relative quiet of August for nonferrous metals.

Major strikes are not in the cards; the sound and fury emanating from contract negotiations can be largely discounted. Metals buyers will be watching the proceedings closely, however, as they will bear on the course of prices and timing of orders during the remainder of the year.

Deadline Near—Of immediate interest is the secrecy-shrouded meetings between Aluminum Co. of America and United Steelworkers of America. It sets the pace for the industry and will almost surely force a price hike on aluminum products if a package similar to the steel settlement is accepted.

International Union of Mine, Mill & Smelter Workers got a green light from workers on a nationwide strike vote last week. Copper producers are its target; among companies affected are Anaconda, Kennecott, Phelps Dodge and American Smelting & Refining.

Mine-Mill is asking 25 cents an hour general increase, among other things, but that's only part of the bargaining game. Settlement at or below the steel level shouldn't be difficult. Copper prices are not likely to be affected as in aluminum. With the vociferousness against copper's present level, imagine the danger in setting an even higher price.

Market calm—August lead market promises to be stronger than either companion metals, copper and zinc. A perceptible weakening in copper is expressed by such events as a quarter-cent easing in copper scrap. There's less reason to suspect a price change in the near future than there was a year ago, when everyone expected copper to topple before the month was out.

Brokers are buying a lot of Chilean copper and may have too much, because they're hedging on the London Metal Exchange. Producers are a bit concerned over lack of pickup in orders for brass mill products with the vacation season ending. Wire mill business is reported doing nicely and copper consumption is strong.

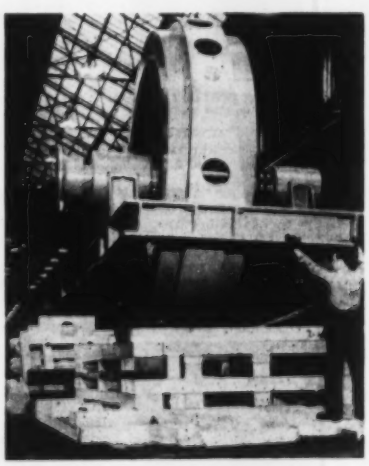
Zinc buyers are satisfied there is no price rise in the offing—in fact, a number are guessing the other way by insisting on average pricing. July statistics for the industry are expected to show about a 20,000-ton reduction in stocks, which will still leave about 180,000 tons in producers' hands and about half that much with consumers.

Lead men note with satisfaction a slight increase in shipments in the first half over the similar 1953 period. Total refined shipments hit 255,827 tons, with battery manufacturers getting 35,317 tons (against 42,543 tons in the first half of 1953), cable makers taking 38,346 tons (against 36,688 tons).

The Government Influence

Pressure is building higher for President Eisenhower to make his decision on lead-zinc tariffs, postponed once on July 19 after a Tariff Commission recommendation they be lifted. Insiders say the administration is opposed to raising tariffs to begin with and hopes the stockpile buying of the two metals would eliminate necessity for so doing, or at least soften the blow of a denial to the industry. The President's decision probably won't be made known until more definite reaction to the stockpile program for the two metals is established.

Another piece of legislation may take on more importance to metal men. In the race towards adjournment, Congress has paid scant attention to the administration's proposed simplification of customs procedures. Last week a scarcely recognizable bill was quickly approved by the House and sent to the Senate. It gives the Tariff Commission until next spring to suggest revision of classifications that won't significantly change tariff levels; a stronger bill was prevented by objections that Congress would not retain sufficiently close control over the changes resulting from the commission study. Under the House bill, the Tariff Commission will be empowered to decide whether dumping of imported goods has injured U. S. producers; one clause would limit effect of antidumping duties to goods entering within 60 days of filing of dumping charges with the government.



Cost-Cutting Motor

Cost-cutting benefits in grinding low-grade copper ore are expected from this high-torque, 1500-hp synchronous motor built by General Electric Co. It is one of six being installed by White Pine Copper Co., Mich., to drive its 13-ft-diameter ball mills

Nickel Prospects Improve

Nickel users, who have been worn down expecting "temporary shortage" to end for four years, are finding the collar less tight. Demand for finished goods is down, coupled with a definite slide in defense uses that may level off between now and the end of the year. The defense slowdown (nickel needs are said to be off perhaps 40-50 per cent for AEC, 20 per cent for aircraft) since the first quarter was sufficient to provide extra nickel for civilian industry.

Nonferrous Briefs

- If a stockpile philosophy now budding comes into bloom, some metal companies won't have to worry about sales problems for many years. At one time the thinking was that sufficient metals should be stockpiled to fill the deficit between actual wartime requirements and normal production. Now the theory is gaining ground that we should stock 100 per cent of our requirements under full mobilization.
- Primary aluminum production during the first half of the year (366,258 tons) was almost 20 per cent over last year's same period and almost as much as during the entire year of 1950, reports the Aluminum Association.

every grade of ZINC

for urgent military and

civilian requirements

SLAB ZINC

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STEEL PRICES

Mill prices as reported to STEEL, cents per pound except as otherwise noted. Changes shown in italics.
Code numbers following mill points indicate producing company; key on page 121. Key to footnotes, page 123.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 .....$61.50

INGOTS, Alloy (NT)
Detroit R7 .....$63.00
Midland,Pa. C18 .....65.00
Munhall,Pa. U5 .....65.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Aliquippa,Pa. J5 ....$64.00
Bessemer,Pa. U5 .....64.00
Clairton,Pa. U5 .....64.00
Ensley,Ala. T2 .....64.00
Fairfield,Ala. T2 .....64.00
Fontana,Calif. K1 ....72.00
Gary,Ind. U5 .....64.00
Johnstown,Pa. B2 .....64.00
Lackawanna,N.Y. B2 ..64.00
Munhall,Pa. U5 .....64.00
So.Chicago,Ill. U5 ....64.00
So.Duquesne,Pa. U5 ..64.00

Carbon, Forging (NT)
Aliquippa,Pa. J5 .....$78.00
Bessemer,Pa. U5 .....78.00
Buffalo R2 .....78.00
Clairton,Pa. U5 .....78.00
Cleveland R2 .....78.00
Conshohocken,Pa. A3 ..83.00
Detroit R7 .....78.50
Ensley,Ala. T2 .....78.00
Fairfield,Ala. T2 .....78.00
Fontana,Calif. K1 ....86.00
Gary,Ind. U5 .....78.00
Geneva,Utah C11 .....78.00
Houston S5 .....85.50
Johnstown,Pa. B2 .....78.00
Lackawanna,N.Y. B2 ..78.00
LosAngeles B3 .....87.00
Munhall Pa. U5 .....78.00
Seattle B3 .....91.50
So.Chicago R2,U5,W14..78.00
So.Duquesne,Pa. U5 ..78.00
So.SanFrancisco B3 ...87.50

Alloy, Forging (NT)
Bethlehem,Pa. B2 ....$86.00
Buffalo R2 .....86.00
Canton,O. T7 .....82.00
Canton,O. R2 .....86.00
Conshohocken,Pa. A3 ..93.00
Detroit R7 .....84.00
Fontana,Calif. K1 ....105.00
Gary,Ind. U5 .....86.00
Houston S5 .....93.00
Ind.Harbor,Ind. Y1 ...86.00
Johnstown,Pa. B2 .....86.00
Lackawanna,N.Y. B2 ..86.00
LosAngeles B3 .....106.00
Massillon,O. R2 .....86.00
Midland,Pa. C18 .... 86.00
Munhall,Pa. U5 .....86.00
So.Chicago R2,U5,W14..86.00
So.Duquesne,Pa. U5 ..86.00
Struthers,O. Y1 .....86.00
Warren,O. C17 .....86.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....$96.50
Cleveland R2 .....96.50
Gary,Ind. U5 .....96.50
So.Chicago R2, W14 ..96.50
So.Duquesne,Pa. U5 ...96.50

SKELP
Aliquippa,Pa. J5 .....4.00
Fontana,Calif. K1 ....4.775
Munhall,Pa. U5 .....3.90
Warren,O. R2 .....3.90
Youngstown R2, U5 ....3.90

WIRE RODS
AlabamaCity,Ala. R2 ..4.675
Aliquippa,Pa. J5 .....4.675
Alton,Ill. L1 .....4.85
Buffalo B11, W12 ....4.675
Cleveland A7 .....4.675
Donora,Pa. A7 .....4.675
Fairfield,Ala. T2 .....4.675
Fontana,Calif. K1 ....5.475
Houston S5 .....5.075
IndianaHarbor,Ind. Y1 4.675
Johnstown,Pa. B2 .....4.675
Joliet,Ill. A7 .....4.675
KansasCity,Mo. S5 ....5.015
Kokomo,Ind. C16 .....4.775
LosAngeles B3 .....5.475
Minnequa,Colo. C10 ...4.925
Monessen,Pa. P7 .....4.675
No.Tonawanda,N.Y.B11 4.525
Pittsburg,Calif. C11 ..5.325
Portsmouth P12 .....4.675
Roebling,N.J. R5 .....4.775
So.Chicago,Ill. R2 ....4.675
Sterling,Ill.(1) N15 ....4.675
Sterling,Ill. N15 .....4.775
Struthers,O. Y1 .....4.675
SparrowsPoint,Md. B2..4.775
Torrance,Calif. C11 ..5.475
Worcester,Mass. A7 ..4.975

STRUCTURALS

Carbon Steel Stand. Shapes
Aliquippa,Pa. J5 .....4.25
Bessemer,Ala. T2 .....4.25
Bethlehem,Pa. B2 .....4.30
Birmingham C15 .....4.25
Clairton,Pa. U5 .....4.25
Fairfield,Ala. T2 .....4.25
Fontana,Calif. K1 ....4.90
Gadsden,Ala.(31) R2 ..4.28
Gary,Ind. U5 .....4.25
Geneva,Utah C11 .....4.25
Houston S5 .....4.65
Ind.Harbor,Ind. I-2 ....4.25
Johnstown,Pa. B2 .....4.30
KansasCity,Mo. S5 ....4.85
Lackawanna,N.Y. B2 ..4.30
LosAngeles B3 .....4.95
Minnequa,Colo. C10 ....4.70
Munhall,Pa. U5 .....4.25
Niles,Calif. P1 .....4.80
Phoenixville,Pa. P4 ....3.80
Seattle B3 .....5.00
So.Chicago U5, W14....4.25
So.SanFrancisco B3 ....4.90
Torrance,Calif. C11 ....4.95
Weirton,W.Va. W6 ....4.25

Wide Flange
Bethlehem,Pa. B2 ....4.30
Clairton,Pa. U5 .....4.25
Fontana,Calif. K1 ....5.25
Lackawanna,N.Y. B2 ..4.30
Munhall,Pa. U5 .....4.25
Phoenixville,Pa. P4 ....3.80
So.Chicago,Ill. U5 .....4.25

Alloy Stand. Shapes
Clairton,Pa. U5 .....5.20
Fontana,Calif. K1 ....6.60
Gary,Ind. U5 .....5.20
Munhall,Pa. U5 .....5.20
So.Chicago,Ill. U5 ....5.20

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 .....6.40
Bessemer,Ala. T2 .....6.40
Bethlehem,Pa. B2 .....6.45
Clairton,Pa. U5 .....6.40
Fairfield,Ala. T2 .....6.40
Fontana,Calif. K1 ....7.05
Gary,Ind. U5 .....6.40
Geneva,Utah C11 .....6.40
Ind.Harbor,Ind. I-2, Y1..6.40
Johnstown,Pa. B2 .....6.45
Lackawanna,N.Y. B2 ..6.45
LosAngeles B3 .....7.10
Munhall,Pa. U5 .....6.40
Seattle B3 .....7.15
So.Chicago,Ill. U5, W14..6.40
So.SanFrancisco B3 ....7.05
Struthers,O. Y1 .....6.40

H.S., L. A. Wide Flange
Bethlehem,Pa. B2 .....6.45
Lackawanna,N.Y. B2 ..6.45
Munhall,Pa. U5 .....6.40
So.Chicago,Ill. U5 .....6.40

PILING

Bearing Piles
Munhall,Pa. U5 .....4.25
So.Chicago,Ill. U5 .....4.25

STEEL SHEET PILING
Ind.Harbor,Ind. I-2 ..5.075
Lackawanna,N.Y. B2..5.075
Munhall,Pa. U5 .....5.075
So.Chicago,Ill U5 ....5.075

PLATES

PLATES, Carbon Steel
AlabamaCity,Ala. R2..4.255
Aliquippa,Pa. J5 .....4.225
Ashland,Ky.(15) A10 ..4.225
Bessemer,Ala. T2 .....4.225
Buffalo(31) R2 .....4.13
Clairton,Pa. U5 .....4.225
Claymont,Del. C22 ....4.225
Chicago(31) R2 .....4.17
Cleveland J5 .....4.225
Cleveland(31) R2 .....4.285
Coatesville,Pa. L7 ....4.225
Conshohocken,Pa. A3 ..4.225
Ecorse,Mich. G5 .....4.375
Fairfield,Ala. T2 .....4.225
Fontana,Calif.(30) K1..4.875
Gadsden,Ala.(31) R2 ..4.13
Gary,Ind. U5 .....4.225
Geneva,Utah C11 .....4.225
GraniteCity,Ill. G4 ....4.425
Harrisburg,Pa. C5 .....3.85
Houston S5 .....4.625
Ind.Harbor,Ind. I-2, Y1 4.225
Johnstown,Pa. B2 .....4.225
Lackawanna,N.Y. B2..4.225
LoneStar,Tex. L6 .....4.40
Mansfield,O. E6 .....4.225
Minnequa,Colo. C10 ...5.075
Munhall,Pa. U5 .....4.225
Newport,Ky. N9 .....4.225
Pittsburgh J5 .....4.225
Riverdale,Ill. A1 .....4.225
Seattle B3 .....5.125
Sharon,Pa. S3 .....4.225
So.Chicago,Ill. U5,W14..4.225
SparrowsPoint,Md. B2 ..4.225
Steubenville,O. W10 ...4.225
Warren,O.(31) R2 ....4.625
Weirton,W.Va. W6 ....4.225
Youngstown(31) R2 ...4.275
Youngstown U5, Y1 ..4.225

PLATES, Carbon Abras. Resist.
Fontana,Calif. K1 ....6.025
Geneva,Utah C11 ....5.375

PLATES, Wrought Iron
Economy,Pa. B14 .....9.80

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 .....6.45
Bessemer,Ala. T2 .....6.45
Clairton,Pa. U5 .....6.45
Cleveland J5, R2 .....6.45
Conshohocken,Pa. A3 ..6.45
Ecorse,Mich. G5 .....6.60
Fairfield,Ala. T2 .....6.45
Fontana,Calif.(30) K1..7.15
Gary,Ind. U5 .....6.45
Geneva,Utah C11 .....6.45
Ind.Harbor,Ind. I-2, Y1.6.45
Johnstown,Pa. B2 .....6.45
Lackawanna,N.Y. B2 ..6.45
LosAngeles B3 .....7.35
Munhall,Pa. U5 .....6.45
Pittsburgh J5 .....6.45
Seattle B3 .....7.15
Sharon,Pa. S3 .....6.45
So.Chicago,Ill. U5, W14.6.45
SparrowsPoint,Md. B2 ..6.45
Warren,O. R2 .....6.45
Youngstown U5, Y1 ....6.45

PLATES, Alloy
Claymont,Del. C22 ....5.80
Coatesville,Pa. L7 ....5.80
Fontana,Calif. K1 .....6.45
Gary,Ind. U5 .....5.80
Johnstown,Pa. B2 .....5.80
LosAngeles B3 .....6.70
Munhall,Pa. U5 .....5.80
Newport,Ky. N9 .....5.80
Sharon,Pa. S3 .....5.80
So.Chicago,Ill. U5, W14.5.80
SparrowsPoint,Md. B2 ..5.80

FLOOR PLATES
Cleveland J5 .....5.275
Conshohocken,Pa. A3..5.275
Harrisburg,Pa. C5 .....5.15
Ind.Harbor,Ind. I-2 ....5.275
Munhall,Pa. U5 .....5.275
So.Chicago,Ill. U5 ....5.275

PLATES, Ingot Iron
Ashland c.l. (15) A10..4.475
Ashland l.c.l. (15) A10.4.975
Cleveland c.l. R2 .....4.70
Warren,O. c.l. R2 .....4.70

BARS

BARS, Hot-Rolled Carbon
Aliquippa,Pa. J5 .....4.30
Alton,Ill. L1 .....4.50
Atlanta,Ga. A11 .....4.50
Bessemer,Ala. T2 .....4.30
Birmingham C15 .....4.30
Buffalo(31) R2 .....4.33
Canton,O.(31) R2 .....4.46
Chicago(31) R2 .....4.37
Clairton,Pa. U5 .....4.30
Cleveland(31) R2 .....4.36
Detroit R7 .....4.30
Ecorse,Mich. G5 .....4.45
Emeryville,Calif. J7 ....4.90
Fairfield,Ala. T2 .....4.30
Fairless,Pa. U5 .....4.45
Fontana,Calif. K1 .....5.00
Gary,Ind. U5 .....4.30
Gadsden,Ala.(31) R2 ..4.33
Houston S5 .....4.70
Ind.Harbor,Ind. I-2, Y1.4.30
Johnstown,Pa. B2 .....4.30
KansasCity,Mo. S5 ....4.90
Lackawanna,N.Y. B2 ..4.30
LosAngeles B3 .....4.90
Massillon,O.(31) R2 ...4.46
Milton,Pa. M18 .....4.15
Minnequa,Colo. C10 ....4.75
Niles,Calif. P1 .....4.85
N.Tonawanda,N.Y. B11.4.30
Pittsburg,Calif. C11 ....5.00
Pittsburgh J5 .....4.30
Portland,Oreg. O4 .....5.05
Seattle B3, N14, P23 ..5.05
So.Chicago U5, W14 ...4.30
So.Duquesne,Pa. U5 ....4.30
So.SanFran.,Calif. B3 ..5.05
Sterling,Ill.(1) N15 ....4.30
Sterling,Ill. N15 .....4.40
Struthers,O. Y1 .....4.30
Torrance,Calif. C11 ....5.00
Warren,O. R2 .....4.34
Weirton,W.Va. W6 ....4.30
Youngstown U5 .....4.30
Youngstown(31) R2 ....4.35

Bars, Hot-Rolled Alloy
Bethlehem,Pa. B2 ....5.075
Buffalo R2 .....5.105
Canton,O. T7 .....4.875
Canton,O. R2 .....5.115
Chicago R2 .....5.145
Clairton,Pa. U5 .....5.075
Detroit R7 .....4.975
Ecorse,Mich. G5 .....5.225
Fontana,Calif. K1 ....6.125
Fairless,Pa. U5 .....5.225
Gary,Ind. U5 .....5.075
Houston S5 .....5.475
Ind.Harbor,Ind. I-2, Y1 5.075
Johnstown,Pa B2 .....5.075
KansasCity,Mo. S5 ....5.675
Lackawanna,N.Y. B2 ..5.075
LosAngeles B3 .....6.125
Massillon,O. R2 .....5.115
Midland,Pa. C18 .....5.075
So.Chicago U5, W14 ..5.075
So.Duquesne,Pa. U5 ..5.075
Struthers,O. Y1 .....5.075
Warren,O. C17 .....5.075
Warren R2 .....4.34
Youngstown U5 .....5.075
Youngstown R2 .....4.35

BARS & SMALL SHAPES, H.R.
High-Strength Low-Alloy
Aliquippa,Pa. J5 .....6.45
Bessemer,Ala. T2 .....6.45
Bethlehem,Pa. B2 .....6.45
Clairton,Pa. U5 .....6.45
Cleveland R2 .....6.45
Ecorse,Mich. G5 .....6.60
Fairfield,Ala. T2 .....6.45
Fontana,Calif. K1 .....7.70
Gary,Ind. U5 .....6.45
Ind.Harb.,Ind. I-2, Y1.6.45
Johnstown,Pa. B2 .....6.45
Lackawanna,N.Y. B2 ..6.45
LosAngeles B3 .....7.15
Pittsburgh J5 .....6.45
Seattle B3 .....7.20
So.Chicago W14 .....6.45
So Duquesne,Pa. U5 ...6.45
So.SanFrancisco B3 ....7.20
Struthers,O. Y1 .....6.45
Youngstown U5 .....6.45

BAR SIZE ANGLES; H.R.CARBON
Bethlehem,Pa. B2 .....4.45

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....4.30
Atlanta A11 .....4.50
Fontana,Calif. K1 ....5.00
Niles Calif. P1 .....4.85
SanFrancisco S7 .....4.70

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 .....5.20
Gary,Ind. U5 .....5.20
Houston S5 .....5.60
KansasCity S5 .....5.80
Youngstown U5 .....5.20

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....5.40
BeaverFalls,Pa. M12 ..5.40
BeaverFalls,Pa. R2 ....5.46
Buffalo B5 .....5.45
Camden,N.J. P13 .....5.85
Carnegie,Pa. C12 .....5.40
Chicago W18 .....5.40
Cleveland A7, C20 ....5.40
Detroit P17, R7 .....5.35
Detroit B5 .....5.80
Donora,Pa. A7 .....5.40
Elyria,O. W8 .....5.40
FranklinPark,Ill. N5 ..5.40
Gary,Ind. R2 .....5.47
GreenBay,Wis. F7 .....5.40
Hammond,Ind. L2, M13 5.40
Hartford,Conn. R2 ....5.90
Harvey,Ill. B5 .....5.40
LosAngeles R2 .....6.85
LosAngeles S30 .....6.65
Mansfield,Mass. B5 ....5.95
Massillon,O. R8 .....5.40
Massillon,O. R2 .....5.44
Monaca,Pa. S17 .....5.40
Newark,N.J. W18 .....5.85
NewCastle,Pa.(17) B4 ..5.40
Pittsburgh J5 .....5.40
Plymouth,Mich. P5 ....5.45
Putnam,Conn. W18 ....5.95
Readville,Mass. C14 ....5.95
St.Louis,Mo. M5 .....5.70
So.Chicago,Ill. W14 ...5.40
SpringCity,Pa. K3 .....5.85
Struthers,O. Y1 .....5.40
Waukegan,Ill. A7 .....5.40
Worcester,Mass. W19 ..6.10
Youngstown F3, Y1 ....5.40

BARS, Cold-Finished Alloy
(Turned and Ground)
Cumberland,Md.(5) C19 4.45

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ...6.625
BeaverFalls,Pa. M12 ..6.625
BeaverFalls,Pa. R2 ...6.685
Bethlehem,Pa. B2 .....6.625
Buffalo B5 .....6.625
Camden,N.J. P13 .....6.80
Canton,O. T7 .....6.325
Carnegie,Pa. C12 ....6.625
Chicago W18 .....6.325
Cleveland A7, C20 ....6.625
Detroit R7 .....6.425
Detroit P17 .....6.475
Detroit B5 .....6.825
Donora,Pa A7 .....6.325
Elyria,O. W8 .....6.625
Gary,Ind. R2 .....6.695
Hammond,Ind. L2, M13 6.625
Hartford,Conn. R2 ....6.925
Harvey,Ill. B5 .....6.625
Lackawanna,N.Y. B2..6.325
Mansfield,Mass. B5 ...7.075
Massillon,O. R8 .....6.625
Massillon,O. R2 .....6.665
Midland,Pa. C18 .....6.625
Monaca,Pa. S17 .....6.625
Newark,N.J. W18 .....6.80
Plymouth,Mich. P5 ....6.525
So.Chicago,Ill. R2 ....6.325
So.Chicago W14 .....6.625
SpringCity,Pa. K3 .....6.80
Struthers,O. Y1 .....6.625
Warren,O. C17 .....6.625
Waukegan,Ill. A7 .....6.325
Worcester,Mass. A7 ...6.925
Youngstown F3, Y1 ....6.625

BARS, Reinforcing (fabricators)
AlabamaCity,Ala. R2 ..4.33
Atlanta A11 .....4.50
Birmingham C15 .....4.30
Buffalo(31) R2 .....4.33
Chicago(31) R2 .....4.37
Cleveland(31) R2 .....4.36
Emeryville,Calif. J7 ....4.90
Fairfield,Ala. T2 .....4.30
Fairless,Pa. U5 .....4.45
Fontana,Calif. K1 ....5.00
Ft.Worth,Tex.(42) 4.90
Gadsden,Ala.(31) R2 ..4.18
Gary,Ind. U5 .....4.30
Houston S5 .....4.70
Ind.Harbor,Ind. I-2, Y1.4.30
Johnstown,Pa. B2 .....4.30
KansasCity,Mo. S5 ....4.90
Lackawanna,N.Y. B2 ..4.30
LosAngeles B3 .....5.00
Milton,Pa. M18 .....4.15
Minnequa,Colo. C10 ....4.75
Niles,Calif. P1 .....4.85
Pittsburg,Calif. C11 ....5.00
Pittsburgh J5 .....4.30
SandSprings,Okla. S5 ..5.15
Seattle B3, N14, P23..5.05
So.Duquesne,Pa. U5 ....4.30
So.SanFrancisco B3 ....5.05
SparrowsPoint,Md. B2 ..4.30
Sterling,Ill.(1) N15 ....4.30
Sterling,Ill. N15 .....4.40
Struthers,O. Y1 .....4.30
Torrance,Calif. C11 ....5.00
Youngstown U5 .....4.30
Youngstown(31) R2 ....4.35

BARS, Reinforcing
(Fabricated; to consumers)
Johnstown, ¼-1" B2 ..5.55
KansasCity S5 .....6.35
LosAngeles B3 .....5.95
Marion,O P11 .....5.55
Seattle N14, P23 .....5.95
Seattle B3 .....6.15
So.SanFrancisco B3 ....6.00
SparrowsPt, ¼-1" B2 ..5.55
Williamsport,Pa. S19 ..5.60

RAIL STEEL BARS
Avis,Pa.(3) J8 .....4.25
ChicagoHts.(3) C2, I-2 4.20
ChicagoHts.(4) C2, I-2 4.30
Ft.Worth,Tex.(26) T4 4.75
Franklin,Pa.(3) F5 ....4.05
Franklin,Pa.(4) F5 ....4.15
Marion,O(3) P11 .....4.15
Moline,Ill.(3) R2 .....4.30
Tonawanda(3,4) B12 ...4.15
Williamsport,Pa.(3) S19.4.30

BARS, Wrought Iron
Economy,Pa.(S.R.) B14 10.85
Economy,Pa.(D.R.) B14 13.50
Economy(Staybolt) B14 13.80
McK.Rks.(S.R.) L5 ..10.85
McK.Rks.(D.R.) L5 ..14.75
McK.Rks.(Staybolt) L5 16.25

SHEETS

SHEETS, Hot-Rolled Steel
(18 gage and heavier)
AlabamaCity,Ala. R2 ..4.05
Allenport,Pa. P7 .....4.05
Ashland,Ky.(8) A10 ....4.05
Cleveland J5, R2 .....4.05
Conshohocken,Pa. A3 ..4.10
Detroit M1 .....4.075
Ecorse,Mich. G5 .....4.20
Fairfield,Ala. T2 .....4.05
Fairless,Pa. U5 .....4.10
Fontana,Calif. K1 ....4.825
Gary,Ind. U5 .....4.05
Geneva,Utah C11 .....4.15
GraniteCity,Ill. G4 ....4.25
Ind.Harbor,Ind. I-2, Y1 4.05
Irvin,Pa. U5 .....4.05

Kokomo,Ind. C16 .....4.15
Lackawanna,N.Y. B2 ..4.05
Mansfield,O. E6 (37) ..4.05
Mansfield,O. E6 (38) ..4.80
Munhall,Pa. U5 .....4.05
Newport,Ky N9 .....4.05
Niles,O. N12 .....4.05
Pittsburg,Calif. C11 ....4.75
Pittsburgh J5 .....4.05
Portsmouth,O. P12 ....4.05
Riverdale,Ill. A1 .....4.05
Sharon,Pa. S3 .....4.05
So.Chicago,Ill. W14 ....4.05
SparrowsPoint,Md. B2..4.05
Steubenville,O. W10 ....4.05
Warren,O. R2 .....4.05
Weirton,W.Va. W6 ....4.05
Youngstown U5, Y1 ....4.05

SHEETS, H.R. (19 ga. lighter)
AlabamaCity,Ala. R2 ..5.35
Kokomo,Ind. C16 .....5.20
Niles,O. N12 .....4.95

SHEETS, H.R. (14 ga. heavier)
High-Strength Low-Alloy
Cleveland J5, R2 .....6.10
Conshohocken,Pa. A3 ..6.15
Ecorse,Mich. G5 .....6.25
Fairfield,Ala. T2 .....6.10
Fairless,Pa. U5 .....6.15
Fontana,Calif. K1 ....6.875
Gary,Ind. U5 .....6.10
Ind.Harbor,Ind. I-2, Y1 6.10
Irvin,Pa. U5 .....6.10
Lackawanna(35) B2 ....6.10
Munhall,Pa. U5 .....6.10
Pittsburgh J5 .....6.10
Sharon,Pa. S3 .....6.10
So.Chicago,Ill. U5 ....6.10
SparrowsPoint(36) B2 ..6.10
Warren,O. R2 .....6.10
Weirton,W.Va. W6 ....6.10
Youngstown U5, Y1 ....6.10

SHEETS, Hot-Rolled Ingot Iron
(18 Gage and Heavier)
Ashland,Ky.(8) A10 ..4.30
Cleveland R2 .....4.65
Cleveland J5 .....4.775
Ind.Harbor,Ind. I-2 ...4.30
Warren,O. R2 .....4.65

SHEETS, Cold-Rolled Steel
(Commercial Quality)
Allenport,Pa. P7 .....4.95
Cleveland J5, R2 .....4.95
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....4.95
Fairless,Pa. U5 .....5.00
Follansbee,W.Va. F4 ..4.95
Fontana,Calif. K1 ....6.05
Gary,Ind. U5 .....4.95
GraniteCity,Ill. G4 ....5.15
Ind.Harbor,Ind. I-2, Y1 4.95
Irvin,Pa. U5 .....4.95
Lackawanna,N.Y. B2 ..4.95
Middletown,O. A10 ....4.95
Pittsburg,Calif. C11 ....5.90
Pittsburgh J5 .....4.95
Portsmouth,O. P12 ....4.95
SparrowsPoint,Md. B2 ..4.95
Steubenville,O. W10 ....4.95
Warren,O. R2 .....4.95
Weirton,W.Va. W6 ....4.95
Youngstown Y1 .....4.95

SHEETS, Cold-Rolled
High-Strength Low-Alloy
Cleveland J5, R2 .....7.50
Ecorse,Mich. G5 .....7.65
Fairless,Pa. U5 .....7.55
Fontana,Calif. K1 ....8.55
Gary,Ind. U5 .....7.50
IndianaHarbor,Ind. Y1..7.50
Irvin,Pa. U5 .....7.50
Lackawanna(37) B2 ...7.50
Pittsburgh J5 .....7.50
SparrowsPoint(38) B2 ..7.50
Warren,O. R2 .....7.50
Weirton,W.Va. W6 ....7.50
Youngstown Y1 .....7.50

SHEETS, Cold-Rolled Ingot Iron
Cleveland R2 .....5.55
Middletown,O. A10 ....5.45
Warren,O. R2 .....5.55

SHEETS, Culvert	Cu Alloy	Cu Fe
Ashland,Ky. A10	6.50	....
Canton,O. R2	6.50	7.10
Fairfield T2	6.25	6.50
Gary,Ind. U5	6.25	6.50
Ind.Harbor I-2	6.25	6.50
Irvin,Pa. U5	6.075	6.325
Kokomo,Ind. C16	6.35	....
MartinsFry.,O. W10	6.25	....
Newport,Ky. N9	6.25	6.50
Pitts.,Calif. C11	7.00	....
SparrowsPt. B2	6.25	....

SHEETS, Culvert	Pure Iron
Ashland,Ky. A10	6.75
Fairfield Ala. T2	6.50
MartinsFerry,O. W10	6.50

SHEETS, Galvanized Steel
Hot-dipped
AlabamaCity,Ala. R2 ..5.45‡
Ashland,Ky. A10 .....5.45*
Butler,Pa. A10 .....5.45†
Canton,O. R2 .....5.45‡
Dover,O. R1 .....5.45‡
Fairfield,Ala. T2 .....5.45*
Gary,Ind. U5 .....5.45*
GraniteCity,Ill. G4 ....5.65‡
Ind.Harbor,Ind. I-2 ...5.45†
Irvin,Pa. U5 .....5.45†
Kokomo,Ind. C16.....5.55‡
MartinsFerry,O. W10 ..5.45*
Middletown,O. A10 ....5.45†
Newport,Ky. N9 .....5.45†
Niles,O. N12 .....5.45‡
Pittsburg,Calif. C11 ...6.20*
SparrowsPt.,Md. B2 ..5.45‡
Steubenville,O. W10 ..5.275‡
Weirton,W.Va. W6 ....5.45*

*Continuous and noncontinuous. †Continuous, ‡Noncontinuous

SHEETS, Galvanized
High-Strength Low-Alloy
Irvin,Pa. U5 .....8.20
SparrowsPoint(39) B2 ..8.20

SHEETS, Galvanized Ingot Iron
Ashland,Ky.(8) A10 ....5.70
Canton,O. R2 .....6.20

SHEETS, Galvanneal Steel
Canton,O. R2 .....5.85
Irvin,Pa. U5 .....6.00
Kokomo,Ind. C16 .....5.95†
Newport,Ky. N9 .....6.00
Niles,O. N12 .....6.00

SHEETS, Galvanized
Ingot Iron
(Hot-dipped continuous)
Ashland,Ky. A10 .....5.70
Butler,Pa. A10 .....5.70
Middletown,O. A10 ....5.70

SHEETS, Electrogalvanized
Cleveland R2 (28) 6.30
Niles,O. R2 (28) 6.30
Weirton,W.Va. W6 ..5.975

SHEETS, Aluminum Coated
Butler,Pa. A10 .....8.625

SHEETS, Enameling Iron
Ashland,Ky.(8) A10 ..5.375
Cleveland R2 .....5.375
Gary,Ind. U5 .....5.375
GraniteCity,Ill. G4 ....5.575
Ind.Harbor,Ind. I-2 ...5.375
Irvin,Pa. U5 .....5.375
Middletown,O. A10 ....5.375
Niles,O. N12 .....5.375
Youngstown Y1 .....5.375

BLUED STOCK, 29 ga.
Follansbee,W.Va. F4 ..7.375
Follansbee(23) F4 .....6.60
Yorkville,O. W10 .....7.375

SHEETS, Long Terne Steel
(Commercial Quality)
BeechBottom,W.Va. W10 5.85
Gary,Ind. U5 .....5.85
Mansfield,O. E6 .....5.85
Middletown,O. A10 ....5.85
Niles,O. N12 .....5.85
Weirton,W.Va. W6 ....5.85

SHEETS, Long Terne, Ingot Iron
Middletown,O. A10 ...6.25

SHEETS, Well Casing
Fontana,Calif. K1 ....6.325

STRIP

STRIP, Hot-Rolled Carbon
Ala.City,Ala.(27) R2 ...4.05
Allenport,Pa. P7 .....4.05
Alton,Ill. L1 .....4.225
Ashland,Ky.(8) A10 ....4.05
Atlanta A11 .....4.25
Bessemer,Ala. T2 .....4.05
Birmingham C15 .....4.05
Bridgeport,Conn.(10)S15 4.05
Buffalo(27) R2 .....4.05
Conshohocken,Pa. A3..4.175
Detroit M1 .....4.075
Ecorse,Mich. G5 .....4.20
Fairfield,Ala. T2 .....4.05
Fontana,Calif. K1 ....4.825
Gary,Ind. U5 .....4.05
Houston,Tex. S5 .....4.45
Ind.Harbor,Ind. I-2, Y1..4.05
Johnstown,Pa.(25) B2...4.05
KansasCity,Mo.(9) S5 ..4.65
Lackaw'na,N.Y.(25) B2..4.05
LosAngeles(25) B3 ....4.80
Milton,Pa. M18 .....3.925
Minnequa,Colo. C10 ....5.15
NewBritain(10) S15 ....4.05
N.Tonawanda,N.Y. B11 4.05
Pittsburg,Calif. C11 ....4.80
Portsmouth,O. P12 ....4.05
Riverdale,Ill. A1 .....4.05
SanFrancisco S7 .....5.00
Seattle(25) B3, P23 ...5.05
Seattle N14 .....5.05
Sharon,Pa. S3 .....4.05
So.Chicago,Ill. W14 ....4.05
So.SanFrancisco(25) B3.4.80
SparrowsPoint,Md. B2...4.05
Sterling(1) N15 .....4.05
Sterling,Ill. N15 .....4.15
Torrance,Calif. C11 ....4.80
Warren,O. R2 .....4.05
Weirton,W.Va. W6 ....4.05
Youngstown U5 .....4.05

STRIP, Hot-Rolled Alloy
Bridgeport,Conn.(10)S15 6.45
Carnegie,Pa. S18 .....6.40
Fontana,Calif. K1 ....8.10
Gary,Ind. U5 .....6.70
Houston,Tex. S5 .....7.10
KansasCity,Mo. S5 .....7.30
LosAngeles B3 .....7.90
NewBritn.,Conn.(10)S15 6.45
Newport,Ky. N9 .....6.70
Seattle P23 .....7.80
Sharon,Pa. S3 .....6.70
So.Chicago W14 .....6.70
Youngstown U5 .....6.70

STRIP, Hot-Rolled
High-Strength Low-Alloy
Bessemer,Ala. T2 .....6.15
Conshohocken,Pa. A3 ..5.95
Ecorse,Mich. G5 .....6.30
Fairfield,Ala. T2 .....6.15
Fontana,Calif. K1 .....7.25
Gary,Ind. U5 .....6.15
Ind.Harbor,Ind. I-2, Y1 6.15
Lackawanna,N.Y. B2 ..6.15
LosAngeles(25) B3 ....6.90
Seattle(25) B3, P23 ....7.15
Sharon,Pa. S3 .....6.15
So.SanFrancisco(25) B3.6.90
SparrowsPoint,Md. B2 ..6.15
Warren,O. R2 .....6.15
Weirton,W.Va. W6 ....6.15
Youngstown U5, Y1 ....6.15

STRIP, Hot-Rolled Ingot Iron
Ashland,Ky.(8) A10 ...4.30
Warren,O. R2 .....4.65

STRIP, Cold-Rolled Carbon
Anderson,Ind. G6 .....5.75
Baltimore T6 .....5.60
Bridgeport,Conn.(10)S15 5.75
Cleveland A7, J5 .....5.75
Dearborn,Mich. D3 ....5.90
Detroit M1 .....5.60
Detroit D2 .....5.90
Detroit P20 .....5.65
Dover,O. G6 .....5.75
Ecorse,Mich. G5 .....5.90
Follansbee,W.Va. F4 ..5.75
Fontana,Calif. K1 ....7.65
FranklinPark,Ill. T6 ..5.85
Ind.Harbor,Ind. I-2 ....6.00
Indianapolis C8 .....5.90
Lackawanna,N.Y. B2 ...5.75
LosAngeles C1 .....7.50
Mattapan,Mass. T6 .....6.30
Middletown,O. A10 .....5.75
NewBedford,Mass. R10..6.20
NewBritain(10) S15 ....5.75
NewCastle,Pa. B4, E5 ..5.75
NewHaven,Conn. A7 ..6.50
NewHaven,Conn. D2 ...6.20
Pawtucket,R.I. N8 .....6.30
Pawtucket,R.I. R3 ....6.40
Pittsburgh J5 .....5.75
Portsmouth,O. P12 ....5.75
Riverdale,Ill. A1 .....5.85
Rome,N.Y.(32) R6 .....5.75
Sharon,Pa. S3 .....5.75
SparrowsPt.,Md. B2, T6 5.75
Trenton,N.J. R5 .....7.00
Wall'ford,Conn. W2 ...6.20
Warren,O. B9 .....5.45
Warren,O. R2, T5 .....5.75
Weirton,W.Va. W6 ....5.75
Worcester,Mass. A7 ....6.80
Youngstown C8, Y1 ....5.75

STRIP, Cold-Rolled Alloy Steel
Carnegie,Pa. S18 .....12.00
Cleveland A7 .....12.45
Dover,O. G6 .....12.45
Fontana,Calif. K1 ....14.55
FranklinPark,Ill. T6 ..12.40
Harrison,N.J. C18 .....12.45
Mattapan,Mass. T6 ....12.80
Pawtucket,R.I. N8 .....12.80
Sharon,Pa. S3 .....12.45
Worcester,Mass. A7 ...12.75
Youngstown C8 .....12.90

STRIP, Cold-Rolled
High-Strength Low-Alloy
Cleveland A7, J5 .....8.60
Dearborn,Mich. D3 ....8.35
Dover,O. G6 .....8.60
Ecorse,Mich. G5 .....8.75
Lackawanna,N.Y. B2..8.425
Pittsburgh J5 .....8.60
Sharon,Pa. S3 .....8.60
SparrowsPoint,Md. B2..8.425
Warren,O. R2 .....8.60
Weirton,W.Va. W6 ...8.60
Youngstown Y1 .....8.60

STRIP, Cold-Rolled Ingot Iron
Warren,O. R2 .....6.35

TIGHT COOPERAGE HOOP
Atlanta A11 .....4.775
Riverdale,Ill. A1 .....4.625
Sharon,Pa. S3 .....4.475
Youngstown U5 .....4.475

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Co.
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.
B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo-Eclipse Corp.
B12 Buffalo Steel Div., H. K. Porter Co. Inc.
B14 A. M. Byers Co.
B15 J. Bishop & Co.
C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div. H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept. Wickwire Spencer Steel Division
C23 Charter Wire Products
C24 G. O. Carlson Inc.
D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.
E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.
F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.
G2 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
H1 Hanna Furnace Corp.
H7 Helical Tube Co.
I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins, E., Steel Tube
I-7 Indiana Steel & Wire Co.
J1 Jackson Iron& Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel&Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.
K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.
L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.
M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M14 McInnes Steel Co.
M16 Md. Fine&Special. Wire
M17 Metal Forming Corp.
M18 Milton Steel Prod. Div., Merritt-Chapman&Scott
N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng.HighCarb.Wire
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N12 Niles Rolling Mill Div.
N14 Nrthwst.Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.
O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills
P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke&Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Division Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P23 Pacific Steel Rolling
R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RellianceDiv.,EatonMfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Products
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
W19 Worcester Pressed Steel
Y1 Youngstown Sheet & Tube

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	5.60	7.95	8.90	10.85	13.15
Bridgeport,Conn.(10) S15	5.75	8.05	9.00	10.95	13.25
Bristol,Conn. W1	...	...	9.30	11.45	....
Carnegie,Pa. S18	...	8.05	9.00	11.15	13.85
Cleveland A7	5.75	8.05	9.00	11.15	13.85
Cleveland,O. C7		*8.05*	*9.00*	*11.15*	*13.85*
Dearborn,Mich. D3	5.90	8.25	9.20	....	....
Detroit D2	5.90	8.25	9.20	10.95	....
Dover,O. G6	5.85	8.05	9.00	11.15	13.85
FranklinPark,Ill. T6	5.85	8.05	9.00	11.15	13.85
Harrison,N.J. C18		*9.30*	*11.45*	*14.15*	
Indianapolis C8	...	8.20	9.00	10.85	....
Mattapan,Mass. T6	6.30	8.35	9.30	11.45	14.15
NewBritn.,Conn.(10) S15	5.75	8.05	9.00	11.15	13.85
NewCastle,Pa. B4	5.75	8.05	9.00	10.95	....
NewCastle,Pa. E5	5.75	8.05	9.00	10.95	13.25
NewHaven,Conn. D2	6.20	8.35	9.30	11.25	....
NewYork W3	...	7.95	8.90	10.85	13.15
Pawtucket,R.I. N8	*6.30*	*8.35*	*9.30*	*11.45*	*14.15*
Riverdale,Ill.(1) A1	5.85	8.05	9.00	11.15	13.85
Rome,N.Y.(32) R6	*5.75*	*8.05*	*9.00*	*10.95*	*13.25*
Sharon,Pa. S3	5.75	8.05	9.00	11.15	13.85
SparrowsPt.,Md. T6	5.75	8.35	9.30	11.45	14.15
Trenton,N.J. R5	...	8.35	9.30	11.45	14.15
Wallingford,Conn. W2	6.20	8.35	9.30	11.25	13.55
Warren,O. T5	5.75	8.05	9.00	10.95	13.25
Weirton,W.Va. W6	5.85	8.05	9.00	10.95	13.25
Worcester,Mass. A7	6.60	8.35	9.30	11.45	14.15
Worcester,Mass. T6	6.30	8.35	9.30	11.45	14.15
Youngstown C8	...	8.05	9.00	10.95	13.25
Spring Steel (Tempered)					
Bristol, Conn. W1			12.90	15.60	....
Buffalo W12			12.90	....	....
FranklinPark,Ill. T6			13.25	15.75	18.75
Harrison,N.J. C18			*12.90*	*15.60*	*19.00*
NewYork W3			12.50	15.00	18.00
Trenton,N.J. R5			12.90	15.60	19.00
Worcester,Mass. T6			12.90	15.60	19.00
Worcester,Mass. W12			12.90	....	....
Youngstown C8			12.85	15.35	18.35

SILICON STEEL

H.R. SHEETS (22 gage) (Cut Lengths)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	...	...	9.10	10.10	11.00
Brackenridge,Pa. A4	...	...	9.10	10.10	11.00
IndianaHarbor,Ind. I-2	8.025	8.50	9.10	10.10	....
Mansfield,O. E6	8.025	8.50	9.10	10.10	11.00
Newport,Ky. N9	8.025	8.50	9.10	10.10	11.00
Niles,O. N12	8.025	8.50	9.10	10.10	....
Vandergrift,Pa. U5	...	8.50	9.10	10.10	11.00
Warren,O. R2	8.025	8.50	9.10	10.10	....
Zanesville,O. A10	...	8.50	9.10	10.10	11.00

C.R. CUT LENGTHS OR COILS (22 Ga.) Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
Brackenridge,Pa. A4	...	...	9.85	10.85	11.75
GraniteCity,Ill. G4	8.425	*8.95*	9.55	*10.55*	....
IndianaHarbor,Ind. I-2	8.225	8.75*	9.35*	....	....
Vandergrift,Pa. U5	...	9.25†	9.85†	10.85‡	11.75†
Vandergrift,Pa. U5	8.225	*8.75*	9.35	*10.35*	*11.25*
Warren,O. R2	8.225	19.25	9.85	10.85	11.75

H.R. SHEETS (22 Gage) (Cut Lengths)	Transformer Grade T-77	T-65	T-58	T-57
BeechBottom,W.Va. W10	11.95	12.50	13.00	14.00
Brackenridge,Pa. A4	11.95	....	....	....
Newport,Ky. N9	11.95	....	....	....
Vandergrift,Pa. U5	11.95	12.50	13.00	14.00
Zanesville,O. A10	11.95	12.50	13.00	14.00

C.R. COILS & CUT LENGTHS (22 Ga.)	T-100	T-90	T-80	T-73	T-72
Butler,Pa. A10	....	....	16.60	17.10	....
Vandergrift,Pa. U5	14.00	15.00	16.60	17.00	12.70
Warren,O. R2	....	....	....	....	12.70‡

* Semiprocessed. † Fully processed only. ‡ Coils annealed; semiprocessed ½c lower.

TIN MILL PRODUCTS

TIN PLATE Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.40	$7.65	$8.05
Fairfield,Ala. T2	7.50	7.75	8.15
Fairless,Pa. U5	7.50	7.75	8.15
Gary,Ind. U5	7.40	7.65	8.05
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.40	7.65	8.05
Irvin,Pa. U5	7.40	7.65	8.05
Niles,O. R2	7.40	7.65	8.05
Pittsburg,Calif. C11	8.15	8.40	8.80
SparrowsPoint,Md. B2	7.50	7.75	8.15
Weirton,W.Va. W6	7.40	7.65	8.05
Yorkville,O. W10	7.40	7.65	8.05

TIN PLATE, American Coke (Base Box)	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$8.70	$8.95
Fairfield,Ala. T2	8.80	9.05
Fairless,Pa. U5	8.80	9.05
Gary,Ind. U5	8.70	8.95
Ind.Har. I-2, Y1	8.70	8.95
Irvin,Pa. U5	8.70	8.95
Pitts.,Cal. C11	9.45	9.70
Sp.Pt.,Md. B2	8.80	9.05
Warren,O. R2	8.70	8.95
Weirton,W.Va. W6	8.70	8.95
Yorkville,O. W10	8.70	8.95

BLACK PLATE (Base Box)	
Aliquippa,Pa. J5	$6.50
Fairfield,Ala. T2	6.60
Fairless,Pa. U5	6.60
Gary,Ind. U5	6.50
GraniteCity,Ill. G4	6.70
Ind.Harbor,Ind. I-2, Y1	6.50
Irvin,Pa. U5	6.50
Niles,O. R2	6.50
Pittsburg,Calif. C11	7.25
SparrowsPoint,Md. B2	6.60
Warren,O. R2	6.50
Weirton,W.Va. W6	6.50
Yorkville,O. W10	6.50

HOLLOWARE ENAMELING Black Plate (29 gage)	
Follansbee,W.Va. F4	6.10
Gary,Ind. U5	6.10
GraniteCity,Ill. G4	6.30
Ind.Harbor,Ind. Y1	6.10
Irvin,Pa. U5	6.10
Yorkville,O. W10	6.10

MANUFACTURING TERNES (Special Coated)	
Fairfield,Ala. T2	$7.85
Gary,Ind. U5	7.75
Irvin,Pa. U5	7.75
Yorkville,O. W10	7.75

MANUFACTURING TERNES, 8 lb	
Gary,Ind. U5	$9.75
Yorkville,O. W10	9.75

MANUFACTURING TERNES, LT. Coated, 6 lb	
Yorkville,O. W10	$8.65

ROOFING SHORT TERNES (8 lb Coated)	
Gary,Ind. U5	9.75

WIRE

WIRE, Manufacturers Bright, Low Carbon	
AlabamaCity,Ala. R2	5.75
Aliquippa,Pa. J5	5.75
Alton,Ill. L1	5.925
Atlanta A11	5.95
Bartonville,Ill. K4	5.85
Buffalo W12	5.75
Chicago W13	5.75
Cleveland A7, C20	5.75
Crawfordsville,Ind. M8	*5.85*
Donora,Pa. A7	5.75
Duluth,Minn. A7	5.75
Fairfield,Ala. T2	5.75
Fostoria,O.(24) S1	*5.95*
Houston S5	6.15
Jacksonville,Fla. M8	*6.27*
Joliet,Ill. A7	5.75
KansasCity,Mo. S5	6.35
Kokomo,Ind. C16	5.85
LosAngeles B3	6.70
Minnequa,Colo. C10	6.00
Monessen,Pa. P7	5.75
No.Tonawanda B11	5.75
Palmer,Mass. W12	6.05
Pittsburg,Calif. C11	6.70
Portsmouth,O. P12	5.75
Rankin,Pa. A7	5.75
So.Chicago,Ill. R2	5.75
So.SanFrancisco C10	6.70
SparrowsPoint,Md. B2	5.85
Sterling,Ill.(1) N15	5.75
Sterling,Ill. N15	5.85
Struthers,O. Y1	5.75
Waukegan,Ill. A7	5.75
Worcester,Mass. A7	6.05

WIRE, MB Spring, High Carbon	
Aliquippa,Pa. J5	7.20
Alton,Ill. L1	7.375
Bartonville,Ill. K4	7.30
Buffalo W12	7.20
Cleveland A7	7.20
Donora,Pa. A7	7.20
Duluth,Minn. A7	7.20
Fostoria,O. S1	*7.20*
Johnstown,Pa. P2	7.20
LosAngeles B3	8.15
Millbury,Mass.(12) N6	7.225
Minnequa,Colo. C10	7.45
Monessen,Pa. P7, P16	7.20
Muncie,Ind. I-7	7.40
Palmer,Mass. W12	7.50
Pittsburg,Calif. C11	8.15
Portsmouth,O. P12	7.20
Roebling,N.J. R5	7.20
So.Chicago,Ill. R2	7.20
So.SanFran. C10	8.15
SparrowsPt.,Md. B2	7.30
Struthers,O. Y1	7.20
Trenton,N.J. A7	7.50
Waukegan,Ill. A7	7.20
Worcester J4	7.225
Worcester A7, T6, W12	7.50

WIRE, Upholstery Spring	
Aliquippa,Pa. J5	6.90
Alton,Ill. L1	7.075
Buffalo W12	6.90
Cleveland A7	6.90
Donora,Pa. A7	6.90
Duluth,Minn. A7	6.90
Johnstown,Pa. B2	6.90
LosAngeles B3	7.85
Minnequa,Colo. C10	7.075
Monessen,Pa. P7, P16	6.90
NewHaven,Conn. A7	7.20
Palmer,Mass. W12	7.20
Pittsburg,Calif. C11	7.85
Portsmouth,O. P12	6.90
Roebling,N.J. R5	7.20
So.Chicago,Ill. R2	6.90
So.SanFrancisco C10	7.85
SparrowsPoint,Md. B2	7.00
Trenton,N.J. A7	7.20
Waukegan,Ill. A7	6.90
Worcester,Mass. A7	7.20

WIRE, Fine & Weaving(8" Coils)	
Alton,Ill. L1	11.375
Bartonville,Ill. K4	11.30
Buffalo W12	11.20
Chicago W13	10.55
Cleveland A7	11.20
Crawfordsville,Ind. M8	*11.30*
Fostoria,O. S1	*11.20*
Jacksonville,Fla. M8	*11.73*
Johnstown,Pa. B2	10.55
Kokomo,Ind. C16	10.55
Minnequa,Colo. C10	10.95
Monessen,Pa. P16	11.20
Muncie,Ind. I-7	11.40
Palmer,Mass. W12	11.50
Roebling,N.J. R5	11.50
So.SanFrancisco C10	11.55
Waukegan,Ill. A7	11.20
Worcester,Mass. A7,T6	11.50

WIRE, Galv'd ACSR for Cores	
Bartonville,Ill. K4	9.90
Buffalo W12	9.90
Johnstown,Pa. B2	9.90
Minnequa,Colo. C10	10.025
Monessen,Pa. P16	9.90
Muncie,Ind. I-7	10.10
Portsmouth,O. D2	9.50
Roebling,N.J. R5	10.20
SparrowsPt.,Md. B2	10.00

ROPE WIRE	(A)
Alton,Ill. L1	9.45
Bartonville,Ill. K4	9.35
Buffalo W12	9.35
Fostoria,O. S1	*9.75*
Johnstown,Pa. B2	*9.75*
Monessen,Pa. P7	9.35
Monessen,Pa. P16	9.75
Muncie,Ind. I-7	9.95
Palmer,Mass. W12	9.65
Portsmouth,O. P12	9.35
Roebling,N.J. R5	9.65
SparrowsPt. B2	*9.85*
Struthers,O. Y1	9.75
Worcester J4, T6	9.65

(A) Plow and Mild Plow; add 0.25c for Improved Plow.

WIRE, Tire Bead	
Alton,Ill. L1	12.75
Bartonville,Ill. K4	13.25
Monessen,Pa. P16	13.15
Roebling,N.J. R5	13.45

WIRE, Cold-Rolled Flat	
Anderson,Ind. G6	7.95
Baltimore T6	7.75
Buffalo W12	7.95
Cleveland A7	7.95
Crawfordsville,Ind. M8	*8.05*
Dover,O. G6	7.95
Fostoria,O. S1	*7.95*
Kokomo,Ind. C16	7.55
FranklinPark,Ill. T6	8.05
Massillon,O. R8	*7.95*
Monessen,Pa. P7, P16	7.95
Pawtkt.,R.I. N8	*8.25*
Rome,N.Y.(32) R6	*7.95*
SparrowsPt.,Md., T6	8.25
Trenton,N.J. R5	8.25
Worcester A7, T6, W12	8.25

WIRE, Merchant Quality (6 to 8 gage)	An'ld.	Galv.
Ala.City R2	6.90	7.30**
Aliquippa J5	6.90	7.425*
Atlanta A11	7.00	7.55
Bartonville(48) K4	7.00	7.55
Buffalo W12	6.90	7.30†
Cleveland A7	6.90	....
Crawfordsville M8	*7.00*	*7.55*
Donora,Pa. A7	6.90	7.30†
Duluth,Minn. A7	6.90	7.30†
Fairfield T2	6.90	7.30†
Houston,Tex. S5	7.30	7.70
Jacks'ville,Fla.M8	*7.425*	*7.95*
Johnstown B2(48)	6.90	7.45*
Joliet,Ill. A7	6.90	7.30†
KansasCity,Mo. S5	7.50	7.90
Kokomo C16	7.00	7.40†
LosAngeles B3	7.85	....
Minnequa C10	7.15	7.55**
Monessen P7 (48)	6.90	7.45
Palmer W12	7.20	7.60†
Pitts.,Calif. C11	7.85	8.25†
Portsmouth(48)P12	6.90	....
Rankin A7	6.90	7.30†
So.Chi'go R2	6.90	7.30**
S.S.Frn.(48)C10	7.85	8.25**
Spar'waPt.B2(48)	7.00	7.55*
Stri'g(1)(48)N15	6.90	7.45
Struthers,O. Y1	6.90	7.40‡
Worcester A7	7.20	....

* Based on 10c zinc; † 5c zinc; ‡ Less than 10c zinc; ** Subject to zinc equalization extras.

WOVEN FENCE, 9-15½Ga.	Col.
Ala.City,Ala. R2	146**
Ala.City, 17 ga. R2	241**
Ala.City, 18 ga. R2	251**
Aliq'ppa,Pa.9-14½ga.J5	149*
Atlanta A11	151
Bartonville,Ill. K4	151
Crawfordsville,Ind. M8	*151*
Donora,Pa. A7	146†
Duluth,Minn. A7	146†
Fairfield,Ala. T2	146†
Houston,Tex. S5	154
Johnstown,Pa. B2	149
Joliet,Ill. A7	146†
KansasCity,Mo. S5	158
Kokomo,Ind. C16	148†
Minnequa,Colo. C10	154**
Monessen,Pa. 9 ga. P17	151
Pittsburg,Calif. C11	169†
Rankin,Pa. A7	146†
So.Chicago,Ill. R2	146**
Sterling,Ill.(1) N15	149

† Based on 5c zinc; * 11c zinc; ** Subject to zinc equalization extras.

BALE TIES, Single Loop	Col.
AlabamaCity,Ala. R2	155
Atlanta A11	157
Bartonville,Ill. K4	157
Crawfordsville,Ind. M8	*157*
Donora,Pa. A7	155
Duluth,Minn. A7	155
Fairfield,Ala. T2	155
Joliet,Ill. A7	155
KansasCity,Mo. S5	167
Kokomo,Ind. C16	157
Minnequa,Colo. C10	160
Pittsburg,Calif. C11	179
So.Chicago,Ill. R2	155
So.SanFran.,Calif. C10	179
SparrowsPoint,Md. B2	157
Sterling,Ill.(1) N15	155

WIRE, Barbed	Col.
AlabamaCity R2	159**
Aliquippa J5	156*
Atlanta A11	164
Bartonville,Ill. K4	164
Crawfordsville,Ind. M8	*164*
Donora,Pa. A7	159†
Duluth,Minn. A7	159†
Fairfield,Ala. T2	159†
Houston,Tex. S5	167
Johnstown,Pa. B2	162*
Joliet,Ill. A7	159†
KansasCity,Mo. S5	171
Kokomo,Ind. C16	161†
Minnequa,Colo. C10	165**
Monessen,Pa. P7	163
Pittsburg,Calif. C11	179†
Rankin,Pa. A7	159†
So.Chicago,Ill. R2	159**
S.SanFrancisco C10	179**
SparrowsPoint,Md. B2	164*
Sterling,Ill.(1) N15	162

† Based on 5c zinc; * 11c zinc; ** Subject to zinc equalization extras.

WIRE (16 gage)	An'ld. Stone	Galv. Stone
Ala.City R2	12.50	14.05**
Aliquippa J5	12.50	14.30*
Bartonville K4	13.25	15.10
Buffalo W12	13.15	....
Cleveland A7	13.15	....
CrawfordsvilleM8	*13.25*	*15.10*
Fostoria,O. S1	*13.25*	*14.80*
Johnstown B2	12.50	14.35*
Kokomo C16	12.60	14.15†
Minnequa C10	13.40	15.10**
Palmer,Mas.W12	13.15	14.70*
Pitts.,Calif. C11	13.50	15.05†
SparrowsPt. B2	12.60	14.45*
Sterling(1) N15	13.15	15.00
Waukegan A7	13.15	14.70†
Worcester A7	13.45	....

* Based on 11c zinc; † 5c zinc; ** Subject to zinc equalization extras.

NAILS, Stock To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	137
Aliquippa,Pa. J5	137
Atlanta A11	139
Bartonville,Ill. K4	139
Chicago,Ill. W13	137
Cleveland A9	142
Crawfordsville,Ind. M8	*139*
Donora,Pa. A7	137
Duluth,Minn. A7	137
Fairfield,Ala. T2	137
Galveston,Tex. D7	139
Houston,Tex. S5	145
Johnstown,Pa. B2	137
Joliet,Ill. A7	137
KansasCity,Mo. S5	149
Kokomo,Ind. C16	139
Minnequa,Colo. C10	142
Monessen,Pa. P7	137
Pittsburg,Calif. C11	156
Rankin,Pa. A7	137
So.Chicago,Ill. R2	137
SparrowsPt.,Md. B2	139
Sterling,Ill.(1) N15	137
Worcester,Mass. A7	143

NAILS, CUT (100 lb keg) To dealers (33)	
Conshohocken,Pa. A3	$8.30
Wheeling,W.Va. W10	8.30

STAPLES, Polished Stock To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	138
Aliquippa,Pa. J5	138
Atlanta A11	140
Bartonville,Ill. K4	140
Crawfordsville,Ind. M8	*140*
Donora,Pa. A7	138
Duluth,Minn. A7	138
Fairfield,Ala. T2	138
Johnstown,Pa. B2	138
Joliet,Ill. A7	138
Kokomo,Ind. C16	140
Minnequa,Colo. C10	143
Monessen,Pa. P7	138
Pittsburg,Calif. C11	157
Rankin,Pa. A7	138
So.Chicago,Ill. R2	138
SparrowsPt.,Md. B2	140
Sterling,Ill.(1) N15	138
Worcester,Mass. A7	144

FENCE POSTS

	Col.
ChicagoHts.,Ill. C2, I-2	150
Duluth,Minn. A7	150
Franklin,Pa. F5	150
Johnstown,Pa. B2	145
Marion,O. P11	145
Minnequa,Colo. C10	155
Moline,Ill. R2	150
So.Chicago,Ill. R2	145
Tonawanda,N.Y. B12	145
Williamsport,Pa. S19	150

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	13.5	list	17.5	0.25	20	2.75	21.5	4.25	21.5	4.25	20.75	3.5	23.25	6
Ambridge, Pa. N2 (†)	13.5	...	17.5	...	20.0	...	21.5	...	21.5	...	20.75	...	23.25	...
Lorain, O. N3 (*)	13.5	2.25	17.5	3.25	20	5.75	21.5	7.25	21.5	7.25	20.75	6.5	23.25	9
Youngstown Y1 (††)	13.5	+1.5	17.5	0.75	20	3.25	21.5	4.75	21.5	4.75	20.75	4	23.25	6.5

ELECTRIC WELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2 (**)	13.5	1.5	17.5	0.75	20.0	3.25	21.5	4.75	21.5	4.75	20.75	4.0	23.25	6.5

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	¼		⅜		½		¾		1		1¼		1½	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c		27.5c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28		2.73	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	...	...	....	...	....	....	23.75	7.5	26.75	11.5	29.25	15	31.75	16	32.25	17
Alton, Ill. L1 (§)	...	...	....	...	....	....	21.75	6.5	24.75	10.5	27.25	14	29.75	14.75	30.25	15.75
Benwood, W.Va. W10(††)	24	+2.5	15.25	+8.25	7.25	+14.25	23.75	8.5	26.75	12.5	29.25	16	31.75	16.75	32.25	17.75
Butler, Pa. F6‡‡	25	+1.5	17	+6.5	9.5	+12	....	..	....	..	....	...	....	...	....	...
Etna, Pa. N2 (†)	...	...	....	...	....	....	23.75	8.5	26.75	12.5	24.25	16	31.75	16.75	32.25	17.75
Fairless, Pa. N3	...	...	....	...	....	....	19.25	..	22.25	..	24.75	...	27.25	....	27.75	....
Fontana, Calif. K1 (§)	...	...	....	...	....	....	10.75	+4.5	13.75	+0.5	16.25	3	18.75	3.75	19.25	4.75
Ind. Harbor, Ind. Y1 (††)	...	...	....	...	....	....	22.75	7.5	25.75	11.5	28.25	15	30.75	15.75	31.25	16.75
Lorain, O. N3 (*)	...	...	....	...	....	....	23.75	13.5	26.75	17.5	29.25	21	31.75	20.5	32.25	21.5
Sharon, Pa. S4 (‡)	25	+1.5	17	+6.5	9.5	+12	....	..	....	..	....	...	....	...	....	...
Sharon, Pa. M6	...	...	....	...	....	....	23.75	8.5	26.75	12.5	29.25	16	31.75	16.75	32.25	17.75
Sparrows Pt., Md. B2 (§)	23	+3.5	15	+8.5	7.5	+14	31.7	6.5	24.75	10.5	27.25	13	29.75	14	30.25	16
Youngstown R2 (**)	...	...	....	...	....	....	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75
Youngstown Y1 (††)	...	...	....	...	....	....	23.75	8.5	26.75	12.5	29.25	16	31.75	16.75	32.25	17.75
Wheatland, Pa. W9(‡)	23	+3.5	15	+8.5	7.5	+14	23.75	8.5	26.75	12.5	29.25	16	31.75	16.75	32.25	17.75

Size—Inches	2		2½		3		3½		4	
List Per Ft	37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5(‡)	32.75	17.5	34.25	17.5	34.25	17.5	....	....	....	....
Alton, Ill. L1 (§)	30.75	16.25	32.35	16	32.25	16	23.25	6.75	23.25	6.75
Benwood, W.Va. W10(††)	32.75	18.25	34.25	18	34.25	18	25.5	8.75	25.5	8.75
Etna, Pa. N2 (†)	32.75	18.25	34.25	19.0	34.25	19.0	25.5	8.75	25.5	8.75
Fairless, Pa. N3	28.25	....	29.75	....	29.75	...	21	....	21	....
Fontana, Calif. K1 (§)	19.75	5.25	21.25	5	21.25	5	12.50	+4.25	12.50	+4.25
Ind. Harbor, Ind. Y1 (††)	31.75	17.25	33.25	17	33.25	17	....	....	....	....
Lorain, O. N3 (*)	32.75	22	34.25	20.5	34.25	20.5	....	....	....	....
Sharon, Pa. M6	32.75	18.25	34.25	18	34.25	18	....	....	....	....
Sparrows Pt., Md. B2 (§)	29.75	15.5	32.25	15.5	32.25	15.5	23.5	6.25	23.5	6.25
Youngstown R2 (**)	32.75	18.25	34.25	18	34.25	18.0	25.50	8.75	25.50	8.75
Youngstown Y1 (††)	32.75	18.25	34.25	18	34.25	18	....	....	....	....
Wheatland, Pa. W9 (‡)	32.75	18.25	34.25	18	34.25	18	....	....	....	....

Galvanized pipe discounts based on zinc price of: (†), 14c; (‡), 11c to under 12c; (*), 5c; (§), over 9c to 11c inclusive; (††), 10.50c-11.50c; (**), 9.50c; with discounts adjusted on price of zinc at time of shipment; (‡‡), 11c.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut length 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	19.59	19.00
1¼	13	....	23.21	18.77
1½	13	21.40	25.65	20.75
1¾	13	25.28	30.31	24.52
2	13	28.33	33.97	27.48
2¼	13	31.91	38.26	30.95
2¼	12	34.63	41.52	33.59
2½	12	38.15	45.74	37.00
2¾	12	41.31	49.53	40.07
3	12	44.05	52.82	42.72

RAILWAY MATERIALS

	Std. No. 1	Std. No. 2	Std. All No. 2	Std. Tee Rails 60 lb Under
RAILS				
Bessemer, Pa. U5	4.45	4.35	4.40	5.35
Ensley, Ala. T2	4.45	4.35	....	5.35
Fairfield, Ala. T2	....	....	....	5.35
Gary, Ind. U5	4.45	4.35	4.40	....
Huntington, W.Va. W7	....	....	....	5.35
Indiana Harbor, Ind. I-2	4.45	4.35	4.40	....
Johnstown, Pa. B2	....	....	...(16)	5.20
Lackawanna, N.Y. B2	4.45	4.35	....	5.35
Minnequa, Colo. C10	4.45	4.35	....	5.85
Steelton, Pa. B2	4.45	4.35	....	5.35
Williamsport, Pa. S19	....	....	....	5.35

TIE PLATES

Fairfield, Ala. T2 ..... 5.275
Gary, Ind. U5 ..... 5.275
Ind. Harbor, Ind. I-2 ..... 5.275
Lackawanna, N.Y. B2 .. 5.275
Minnequa, Colo. C10 ... 5.275
Seattle B3 ..... 5.425
Steelton, Pa. B2 ..... 5.275
Torrance, Calif. C11 .. 5.425

TRACK BOLTS (20) Treated

Cleveland R2 ..... 11.50
KansasCity, Mo. S5 .... 11.50
Lebanon, Pa. B2 ..... 11.50
Minnequa, Colo. C10 ... 11.00
Pittsburgh O3 ..... 11.50
Pittsburgh P14 ..... 11.50
Seattle, Wash. B3 ..... 12.00

JOINT BARS

Bessemer, Pa. U5 ..... 5.425
Fairfield, Ala. T2 ..... 5.425
Ind. Harbor, Ind. I-2 ... 5.425
Joliet, Ill. U5 ..... 5.425
Lackawanna, N.Y. B2.. 5.425
Minnequa, Colo. C10 ... 5.425
Steelton, Pa. B2 ..... 5.425

SCREW SPIKES

Cleveland R2 ..... 11.00

AXLES

Ind. Harbor, Ind. S13 ... 6.75
Johnstown, Pa. B2 ..... 6.75

STANDARD TRACK SPIKES

Fairfield, Ala. T2 ..... 7.30
Ind. Harbor, Ind. I-2, Y1. 7.30
KansasCity, Mo. S5 .... 7.30
Lebanon, Pa. B2 ..... 7.30
Minnequa, Colo. C10 .... 7.30
Pittsburgh J5 ..... 7.30
Seattle B3 ..... 7.80
So. Chicago, Ill. R2 ..... 7.30
Struthers, O. Y1 ..... 7.30
Youngstown R2 ..... 7.30

RIVETS

F.o.b. Cleveland, and/or freight equalized with Pittsburgh, f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great.

Structural ½-in., larger 9.25
⅞-in. under..List less 37%

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers ..... List

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants, per cent off list for less than case lots to consumers)

6 in. and shorter:
½-in. & smaller diam. 4
⅝-in. & ⅝-in. 5
¾-in. and larger 3
Longer than 6 in.:
All diameters ..... +4
Lag bolts, all diams.:
6 in. and shorter.... 12
Over 6 in. long 8
Ribbed Necked Carriage 5
Blank 25
Plow 25
Step, Elevator, Tap and Sleigh Shoe 12
Fire Bolts ..... List
Boiler & Fitting-Up Bolts 23

NUTS

H.P. and C.P., regular & heavy:
Square, all sizes 58
H.P., Hex, regular & heavy:
¾" and smaller 58
⅞" to 1⅛", inclusive 60
1¼" to 1½", inclusive 62
1⅝" and larger 58
C.P. Hex regular & heavy:
All sizes 58
Hot Galv. Nuts (all types):
¾" to 1½", inclusive. 40
⅞" to 1½", inclusive. 43
Finished Hex Nuts:
New standard, all sizes 58
Semifinished & Slotted Hex:
Regular and heavy, all sizes 58

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam. x 6 in. and shorter 34
1 in. and smaller diam. x over 6 in. 20

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller 34
¼ in. diam & larger.... 14
N.F. thread, all diams. 8

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish ..... 47.5—10
Plated finishes ..... 30—10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:
⅝-in. & smaller 38
¾-in. through 1 in. .. 22
Longer than 6 in.:
⅝-in. and smaller ... 20
¾-in. through 1 in. .. 7

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

	Cents
Sponge iron:	
98+% Fe, annealed	18.00
Unannealed	
Minus 100 mesh ..	14.50
Minus 35 mesh ..	10.25
Minus 20 mesh ..	10.00
Swedish, c.l.f. N. Y., c.l., in bags	11.25
Domestic (Swedish), f.o.b. Riverton, N. J., in bags ...	11.25
Electrolytic iron:	
Melting stock, 99.91% Fe, irregular fragments of ⅛ in. x 1.3 in.	22.00
Annealed, 99.5% Fe.	36.50
Unannealed (99+% Fe)	32.50
Unannealed (99+% Fe) (minus 325 mesh)	52.00
Powder Flakes (minus 16, plus 100 mesh)..	31.00
Carbonyl Iron: 97.9-99.8% size 5 to 10 microns.	83.00-148.00
Aluminum:	
Atomized, 500 lb drums, frgt. allowed:	
Carlots	32.00
Ton lots	34.00
Antimony, 500 lb lots	32.00*
Brass, ¼-ton lots	28.75-37.50†
Bronze, ¼-ton lots	31.00-39.00†
Copper:	
Electrolytic	13.50*
Reduced	13.50*
Lead	7.50*
Manganese:	
Minus 35 mesh	61.00
Minus 100 mesh	67.00
Minus 200 mesh	72.00
Nickel, unannealed ...	89.50
Nickel-Silver, ¼-ton lots	45.75‖
Nickel-Silver, ¼-ton lots	48.50**
Phosphor-Bronze, ¼-ton lots	58.50
Silicon	43.50
Solder	8.50*
Stainless Steel, 302 ...	91.00
Tin	14.50*
Zinc, ¼-ton lots.	18.25-32.00‡
Tungsten	Dollars
Melting grade, 99% 60 to 200 mesh:	
1000 lb and over....	4.95
Less than 1000 lb ..	5.10
Chromium electrolytic 99.2% Cr min.	3.50

*Plus cost of metal. †Depending on composition. ‡Depending on mesh. ‖70% Cu, 20% Zn, 10% Ni; **64% Cu, 18% Zn, 18% Ni.

Footnotes

(1) Chicago base.
(2) Angles, flat, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1¼" to 1 7/16"; 1 7/16" to 1 15/16" 4.58c; 1 15/16" to 7 5/16" 4.95c.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ¾" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven, Conn., base.
(22) Del. San Francisco Bay area.
(23) 20 Ga. 36" wide.
(24) Deduct 0.10c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing mill lengths, to fabricators; to consumers, 4.95c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c for carbon and 0.35c H.S.-L.A.
(31) Base; deld. within mill county.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 13 gage & lighter; 80" & narrower.
(38) 14 gage & lighter; 48" and narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. to mill zone or within switching limits, 5.10c.
(48) 6-7 gage.

STAINLESS STEEL MILL PRICES

(Representative prices cents per pound; subject to current lists of extras)

AISI Type	Rerolling Ingots	Rerolling Slabs, Billets	Forging Billets	Seamless Tube Billets	Shapes; H.R. & C.F. H.R. Strip	Shapes; H.R. & C.F. Bars; Wire	Plates	Sheets	C.R. Strip; Flat Wire
301	16.25	20.50	29.50	34.25	29.75	35.25	37.25	41.25	38.25
302	17.25	22.75	29.75	34.50	32.00	35.50	37.50	41.50	41.50
302B	18.50	24.50	30.50	34.50	35.00	35.50	37.50	44.75	44.75
303	18.75	24.75	32.25	37.25	36.75	38.25	39.75	48.75	45.50
304	18.25	23.75	31.00	36.00	34.25	37.25	39.75	43.75	43.75
304L	....	....	36.75	....	....	42.75	45.25	49.00	49.00
306	19.50	25.50	....	36.25	37.00	37.50	42.00	51.75	46.75
308	19.75	26.25	35.25	40.75	38.00	42.00	46.00	48.00	48.00
309	26.50	34.75	43.25	49.25	49.25	50.50	53.75	62.00	62.00
309S	28.50	37.50	47.50	54.50	54.00	55.50	59.00	68.50	68.50
310	33.00	43.25	56.75	66.25	62.75	67.50	69.00	72.25	72.25
314	....	....	....	....	....	....	69.00	74.50	....
316	28.00	36.25	46.75	54.50	53.25	55.50	59.00	62.75	62.75
316L	....	....	52.50	....	58.25	61.00	64.25	67.75	67.75
317	33.00	43.50	58.25	66.75	67.50	68.25	70.75	77.00	77.00
318	33.50	44.00	55.25	64.50	66.25	65.50	68.75	80.25	80.25
321	22.75	29.50	35.25	40.75	41.00	42.00	46.00	50.50	50.50
330	....	....	58.00	....	....	68.50	70.00	73.75	77.75
347	24.50	32.25	39.50	45.75	46.50	46.75	51.25	59.25	59.25
403	....	....	27.00	30.75	....	32.00	34.25	44.00	41.25
405	16.50	21.75	25.25	29.25	30.50	30.25	31.75	39.75	39.75
410	14.00	18.25	24.00	27.75	26.25	28.75	30.00	34.25	34.25
416	....	....	24.50	28.25	....	29.25	30.50	41.25	41.25
420	22.00	28.50	29.25	34.00	35.50	35.00	38.50	52.75	52.75
430	14.25	18.50	24.50	28.25	27.00	29.25	30.50	34.75	34.75
430F	....	18.75	25.00	28.75	....	29.75	31.00	44.00	44.00
431	14.50	28.50	25.00	28.25	27.50	29.25	30.50	35.25	35.25
440A,B,C	....	28.50	29.25	34.00	....	35.00	38.50	49.25	52.75
442	....	....	28.00	....	....	30.50	35.25	48.25	47.75
446	....	....	33.75	38.25	50.25	39.50	40.75	59.75	59.75
501	....	....	14.00	14.50	21.25	16.00	18.25	29.00	29.00
502	....	....	15.25	16.00	22.25	17.00	20.00	30.00	30.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; Alloy Metal Wire Co. Inc.; American Steel & Wire Div., U. S. Steel Corp.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products Co.; Cold Metal Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Ellwood Ivins Steel Tube Works Inc.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Globe Steel Tubes Co.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg Warner Corp.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McLouth Steel Corp.; Metal Forming Corp.; McInnes Steel Co.; National-Standard Co.; National Tube Div., U. S. Steel Corp.; Newman-Crosby Steel Co.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Rodney Metals Inc.; Rome Mfg. Co.; Rotary Electric Steel Co.; Sharon Steel Corp.; Sawhill Tubular Products Inc.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Spencer Wire Corp.; Stainless Welded Products Inc.; Standard Tube Co.; Superior Steel Corp.; Superior Tube Co.; Timken Roller Bearing Co.; Trent Tube Co., Tube Methods Inc.; Ulbrich Stainless Steels; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

CLAD STEEL

Cladding Stainless	Plates, Carbon Base 10%	Plates, Carbon Base 20%	Sheets, Carbon Base 20%	Sheets, Copper Base Both Sides
302	....	31.00	31.00	77.00
304	27.60	32.50-32.70	32.50	77.00
310	36.50	41.00	.....	144.00
316	32.60	37.70-42.75	42.75	....
318	37.00	42.20	.....	....
321	29.80	34.40-37.00	37.00	111.00
347	30.40	35.50-40.50	40.50	130.00
405	23.40	30.60	.....	....
410	22.90	30.10	.....	....
430	22.90	30.10	.....	....
Inconel	41.23	54.18	.....	165.00
Nickel	37.50	50.90	.....	....
Monel	38.90	51.80	.....	....
Copper*	....	.....	46.00	....

	Strip, Carbon Base, Cold-Rolled 10%	Strip, Carbon Base, Cold-Rolled Both Sides	Strip, Carbon Base, Hot-Rolled 10%	Strip, Carbon Base, Hot-Rolled Both Sides
Copper*	27.85	35.85	24.00	32.25

* Deoxidized. Production points: Stainless sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; Copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets is Carnegie, Pa. A13.

TOOL STEEL

Grade	$ per lb	Grade	$ per lb
Regular Carbon	0.26	5% Cr Hot Work	0.405
Extra Carbon	0.31-.315	W-Cr Hot Work	0.425
Special Carbon	0.37	V-Cr Hot Work	0.44
Oil Hardening	0.405	Hi-Carbon-Cr	0.73

Grade by Analysis (%)

W	Cr	V	Co	Mo	$ per lb
20.25	4.25	1.6	12.25	...	4.030
19	4	2	12	...	3.990
18.25	4.25	1	4.75	...	2.245-2.415
18	4	2	9	...	2.615
18	4	2	....	...	1.705
18	4	1	....	...	1.540
18	4	1	5	...	2.250
14	4	2	5	...	2.185
13.75	3.75	2	5	...	2.185
13.5	4	3	....	...	1.805
9	3.5	..	....	...	1.115
6	4	2	....	5	1.045
6	4	3	....	6	1.290
1.5	4	1	....	8.5	0.090

Tool Steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

PIG IRON

Gross Ton

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax.

	Basic	No. 2 Foundry	Malleable	Bessemer
Birmingham District				
AlabamaCity R2	52.38	52.88	....	....
Birmingham R2	52.38	52.88	....	....
Birmingham U6	....	52.88	56.50†	....
Woodward,Ala. W15	52.38	52.88	56.50†	....
Cincinnati, del.	....	60.43	....	....
Buffalo District				
Buffalo R2, H1	56.00	56.50	57.00	....
Tonawanda,N.Y. W12	56.00	56.50	57.00	....
No.Tonawanda,N.Y. T9	....	56.50	57.00	57.50
Boston, del.	66.65	67.15	67.65	....
Rochester,N.Y., del.	59.02	59.52	60.02	....
Syracuse,N.Y., del.	60.12	60.62	61.12	....
Chicago District				
Chicago I-3	56.00	56.50	56.50	57.00
Gary,Ind. U5	56.00	....	56.50	....
IndianaHarbor,Ind. I-2	56.00	....	56.50	....
So.Chicago,Ill. W14, Y1	56.00	56.50	56.50	....
So.Chicago,Ill. U5	56.00	....	56.50	57.00
Milwaukee, del.	58.17	58.67	58.67	59.17
Muskegon,Mich., del.	....	62.80	62.80	....
Cleveland District				
Cleveland A7	56.00	56.50	56.50	57.00
Cleveland R2	56.00	56.50	56.50	....
Akron,O., del. from Cleve.	58.75	59.25	59.25	59.75
Lorain,O. N3	56.00	....	....	57.00
Mid-Atlantic District				
Bethlehem,Pa. B2	58.00	58.50	59.00	59.50
NewYork, del.	....	62.28	62.78	....
Newark, del.	61.02	61.52	62.02	62.52
Birdsboro,Pa. B10	58.00	58.50	....	....
Steelton,Pa. B2	58.00	58.50	59.00	59.50
Swedeland,Pa. A3	58.00	58.50	59.00	59.50
Philadelphia, del.	59.66	60.16	60.66	61.16
Troy, N. Y. R2	58.00	58.50	59.00	....
Pittsburgh District				
NevilleIsland,Pa. P6	56.00	56.50	56.50	57.00
Pittsburgh (N&S sides), Ambridge, Aliquippa, del.	57.37	57.87	57.87	58.37
McKeesRocks, del.	57.04	57.54	57.54	58.04
Lawrenceville,Homestead, Wilmerding,Monaca, del.	57.66	58.16	58.16	58.66
Verona,Trafford, del.	58.19	58.69	58.69	59.19
Brackenridge, del.	58.45	58.95	58.95	59.45
Bessemer,Pa. U5	56.00	....	56.50	57.00
Clairton,Rankin,So.Duquesne,Pa. U5	56.00	....	....	....
McKeesport,Pa. N3	56.00	....	....	57.00
Midland,Pa. C18	56.00	....	....	....
Monessen,Pa. P7	56.00	....	....	....
Youngstown District				
Hubbard,O. Y1	....	....	56.50	....
Sharpsville,Pa. S6	56.00	56.50	56.50	57.00
Youngstown Y1	....	....	56.50	57.00
Youngstown U5	56.00	....	....	57.00
Mansfield,O., del.	60.90	....	61.40	61.90
Duluth I-3	56.00	56.50	56.50	57.00
Erie,Pa. I-3	56.00	56.50	56.50	57.00
Everett,Mass. E1	60.50	61.00	61.50	....
Fontana,Calif. K1	62.00	62.50	....	....
Geneva,Utah C11	56.00	56.50	....	....
GraniteCity,Ill. G4	57.90	58.40	58.90	....
Ironton,Utah C11	56.00	56.50	....	....
LoneStar,Texas L6	52.00	52.50*	52.50	....
Minnequa,Colo. C10	58.00	59.00	59.00	....
Rockwood,Tenn. T2	....	52.50*	56.50	....
Toledo,O. I-3	56.00	56.50	56.50	57.00
Cincinnati, del.	61.76	62.26	....	....

* Low phos. southern grade. † Phos., 0.30 max.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si; 75 cents for each 0.5% Mn over 1%)

Jackson,O. G2, J1	$67.00
Buffalo H1	68.25

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.45 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls,N.Y. P15	$87.50
Keokuk,Iowa, Openhearth & Fdry, freight allowed K2	92.00
Keokuk, OH & Fdry, 12½ lb piglets, 16% Si, frgt allowed K2	95.00
Wenatchee,Wash. OH & Fdry, freight allowed K2	92.00

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate A7	$61.00
Rockwood,Tenn. T3	70.00
Steelton,Pa. B2	64.00
Philadelphia, del.	64.00
Troy,N.Y. R2	64.00

MAX-EL

alloy steel cutter head
for high-speed
electric moulder
finish-machined
after
heat treatment

You're looking at the "firing line" part of Mattison Machine Works' No. 276 High-Speed Electric Moulder. For this cutter head holds six knives that travel at up to 7200 rpm to do the machine's work of fast, vibration-free woodworking.

Hot-rolled Crucible MAX-EL® 3½ was chosen for this vital part. The forged and annealed MAX-EL blank is rough machined, then heat treated to 26-30 Rockwell "C" – *and then finish-machined.*

The remarkable machinability of MAX-EL after heat treatment... its dimensional stability... and its uniformity, which permits heat treating to a very close range of hardness – these characteristics make MAX-EL an ideal choice for vital machine components such as this cutter head.

But try MAX-EL in your own shop. You'll see for yourself how these outstanding properties mean *faster* machining... *fewer* rejects ... *longer* tool life. On your next order for alloy steel – include MAX-EL. For immediate delivery – *call Crucible.*

54 years of Fine steelmaking

CRUCIBLE first name in special purpose steels

ALLOY STEELS

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

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Canadian Distributor – Railway & Power Engineering Corp., Ltd.

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except Birmingham, St. Paul, 15 cents; Boston, Philadelphia, New York, 10 cents; Seattle and Spokane, Wash., no change; at Buffalo and Philadelphia, on cold-finished bars and sheets and alloy bars, 25 cents.)

	SHEETS				STRIP		BARS			Standard Structural Shapes	PLATES	
	Hot Rolled	Cold Rolled	Gal. 10 Ga.†	Stainless Type 302	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy 4140††§		Carbon	Floor
Baltimore	6.22	7.51	7.78	....	6.89	...	6.88	8.52[6]	12.04	6.92	6.57	7.96
Birmingham	6.35	7.35	8.25[3]	....	6.60	...	6.50	9.10	....	6.65	6.65	8.45
Boston	7.23	8.23	9.52	44.78[9]	7.47	...	7.20	8.60	12.45	7.49	7.37	8.50
Buffalo	6.35	7.40	8.84	....	6.70	...	6.50	7.90	12.20	6.77	6.70	7.80
Carnegie, Pa.	6.38	...	8.30	....	6.72	...	6.51	7.85	12.15	6.72	6.65	6.90
Charlotte, N. C.	6.95	7.80	8.69	....	6.90	...	7.10	8.37	....	7.10	7.10	8.37
Chicago	6.38	7.38	8.30	43.55	6.62	...	6.51	7.50	11.90	6.69	6.52	7.64
Cincinnati	6.48	7.37	8.25	43.80‖‖	6.86	...	6.75	7.80	12.15	6.86	6.81	7.89
Cleveland	6.38	7.38	8.45	45.66	6.72	...	6.57	7.60	11.96	7.02	6.69	7.81
Detroit	6.57	7.57	8.58	41.50	6.90	7.36	6.79	7.79	12.10	7.16	6.80	7.83
Erie, Pa.	6.35	7.38	8.30	....	6.70	...	6.50	7.45[4]	....	6.69	6.52	7.64
Houston	7.35	7.80	9.93	....	7.70	9.30	7.70	9.50	....	7.35	7.35	8.75
Los Angeles	7.40	9.25	9.80	50.15	7.55	11.20	7.35	10.05	13.20	7.55	7.35	9.45
Milwaukee	6.47	7.47	8.39	....	6.71	...	6.60	7.69	11.99	6.86	6.61	7.73
Moline, Ill.	6.73	7.73	8.65	....	6.97	...	6.86	7.85	....	6.81	6.87	....
New York	6.97	7.91	8.79	44.45	7.56	...	7.37	8.73[6]	10.53	7.38	7.27	8.68
Norfolk, Va.	6.90	...	...	....	7.00	...	7.00	8.50	...	7.00	6.49	7.51
Philadelphia	6.19	7.29	8.23	41.98[9]	6.96	8.80	6.74	8.19[6]	11.96	6.54	6.49	7.51**
Pittsburgh	6.38	7.38	8.30	43.50	6.72	...	6.51	7.85	11.90	6.69	6.52	7.64**
Portland, Oreg.	7.60	8.75	9.70	48.50	7.85	...	7.55	10.95	14.00	7.50	7.45	9.35
Richmond, Va.	6.43	7.39	8.67	....	6.77	...	6.71	8.08	....	7.08	6.65	8.08
St. Louis	6.67	7.67	8.59	43.89	6.91	...	6.80	7.89	12.19	7.09	6.81	7.93
St. Paul	7.03	8.03	8.96	....	7.28	...	7.16	8.26	....	7.12	7.19	8.30
San Francisco	7.55	8.95	9.35	48.15	7.80	...	7.35	10.05	13.20	7.50	7.40	9.45
Seattle	8.10	9.80	10.15	50.50	8.20	...	7.80	10.95	13.65	7.75	7.80	9.60
Spokane	8.35	9.65[7]	10.05	....	8.30	...	7.80	10.85[8]	14.40	7.45	7.55	9.60
Washington	6.71	7.65	8.35	...	7.51	...	7.37	8.43	....	7.49	7.36	8.49

*Prices do not include gage extras; †prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extras excluded); ‡includes 35-cent special bar quality extra; §as rolled; **¼-in. and heavier; ††as annealed. §§plus $2 for crating. Base quantities, 2000 to 9999 lb except as noted: Cold-rolled strip and cold-finished bars, 2000 lb and over, except in Seattle where base is 2000 to 9999 lb; stainless sheets, 8000 lb except in New York and Boston where base is 10,000 lb.[2]—500 to 9999 lb;[4]—4000 lb and over; [5]—1000 to 1999 lb; [6]—1000 lb and over; [7]—1500 lb to 3999; [8]—under ½ in.; [9]—f.o.b. local delivery in lots of 10,000 lb and over.

Warehouse Steel Demand Still Lags

Pickup in distributors' business may be slow until around Labor Day. Keen competition among sellers exerting pressure on higher price schedules

Cleveland—Summer lull in the warehouse business is seen continuing through this month as plant suspensions for vacations have not yet been completed. Expectations are buying will pick up noticeably around Labor Day. Some distributors report current demand as fair but not up to that of last summer's volume.

With warehouse stocks in balance competition for orders is keen. Generally, the distributors have marked their price schedules up to reflect the hike in prices charged by the mills, but some sellers question whether the new schedules will stick long in event the anticipated September upsurge in buying falls short of expectations.

Chicago — Warehouse steel sales continue to hold better than mill sales. Total volume is off from earlier months this year and it is a tossup whether July or August will wind up in the low position. Day to day business is quite miscellaneous as to products, providing no standout.

Philadelphia—Distributors anticipate little improvement in August. At least one warehouse operator believes that business will be off, if anything. Trading in the month just ended was the lightest so far this year. No further revisions in prices are noted, although the cold-finished bar schedule is coming in for further consideration, particularly with regard to quantity extras.

Cincinnati—Warehouse business has improved slightly the last 30 days. Consumers are thought to be running out of various items. August will be a better month than July.

Boston—Warehouse sales for July were the lowest this year, as expected. Not much recovery is seen this month. Sharp competition is intesified by a wider range of foreign steel offered, more flat-rolled in addition to bars and structurals. On standard carbon products, inventories have been worked down to better balance, but most distributors are still carrying too much slow moving, off-size tonnage.

New York—Warehouse prices have undergone further revisions here with city delivery charges now 10 cents per 100 pounds, against 30 cents previously. Base quantities are now 2000 to 9999 pounds except for galvanized which are 1500 to 9999 pounds; stainless sheets 10,000 pounds and over; cold-finished bars 1000 pounds and over; hot-rolled alloy, 1000 pounds to 1999 pounds inclusive.

Current demand is slow with the probability that August business will show little gain over that for July.

Pittsburgh—Warehouse purchasing and selling remain slow. No marked change is likely to occur in August, although a business pickup is predicted for September. Sales managers say the customary midsummer slump may now have reached its low point, and any change should be for the better. Only products selling well now are a few construction items, structural shapes and pipe for construction use.

St. Louis—Warehouse steel volume has slipped following a flurry of buying by consumers attempting to get ahead of the price increase. Structurals are holding up best, but cold-finished sheets, once a scarce item, are in long supply. Warehouse stocks are at desired maximum, with good diversity of sizes and items.

San Francisco—Business is steady. Most distributors think this will continue the pattern. They believe laying in of heavy inventories by their customers is a thing of the past.

Los Angeles—With summer activity slumping, warehouses have more steel to sell than at any time this

year. Most distributors have 50 per cent more steel on hand than at this time last year. All products are in ample supply.

Portland, Oreg.—While admitting price cutting in this area, local warehouse executives say the situation has been exaggerated and is now approaching a firmer price basis. High inventories and overstocking of foreign steel contributed to the unsettled market the last few months.

Surpluses have now been mostly sold, it is said, and while conditions are not yet 100 per cent right, stability is expected in the near future.

Volume is well maintained although it is under a year ago. The current lumber strike is seriously affecting sales. However, construction continues active and when lumber and logging are resumed, good fall business will follow.

Tubular Goods . . .

Tubular Goods Prices, Page 123

Boston — While some merchant steel pipe distributors are getting $4.50 to $5 more per ton, buttweld and galvanized, another group continues to sell 10 points or more off list. They are not fully following discounts reduced by mills, 2.50 and 2.25 points.

This spotty weakness in buttweld stems partly from heavy supplies. Jobbers can obtain stock shipments of buttweld in one week or 10 days, 4-inch and under.

Seamless is in stronger position, supported by heavier direct shipments with mill stocks less a factor.

Pittsburgh—Specialty tube items remain highly competitive. No single industry is increasing its requirements. Construction needs are dropping slightly from the high levels of second quarter.

Third quarter oil country order books filled quickly, and business is brisk now, but there is some evidence that drilling will be cut back in the fourth quarter.

Alliance, O.—The Tubular Product Division, Babcock & Wilcox Co. has revised upward its prices on electric-resistance-welded carbon steel pressure tubes produced here. The new price schedule became effective July 22, the increases reflecting recent rise in costs.

Seattle—System improvements in Alaska involve sizable tonnage of cast iron pipe. Pacific States Cast Iron Pipe Co. has booked 400 tons of 6 and 8-inch for a project at Valdez. Bids are in at Kodiak for 500 tons and tenders will be opened Aug. 11 for 500 tons at Fairbanks.

Prices Advanced on Imported Steel

Boom times in western Europe reflected in markups of $3 to $11 per ton on various items brought into this country. Delivery promises running three months and more

New York—Reflecting boom times in western Europe, prices here on steel imported from abroad are substantially higher on a number of items.

Merchant bars are up $5 a ton, deformed bars $4 at most ports, bar size angles and structural angles $3, hot-rolled bands $5 and barbed wire, $11.

Furring channels are up some and also Thomas wire rods. Seamless casing is moving up $4 to $5, depending upon size and quality, with new price schedules expected out shortly.

Commenting on the strength abroad, one leading importer says western European mills are operating at virtual capacity on all bars and small shapes; also on merchant wire products and strip and bands. Delivery promises on most of these items are running three months and over.

Activity on the other side is attributed mainly to the requirements of the western European countries themselves. However, there is a good demand from various other sections of the world, which is contributing to the stringency in western Europe. For instance, Argentina is again an active buyer of European steel, especially wire products and certain types of bars.

An importer here comments upon the particularly good demand for reinforcing steel in Florida.

Among products imported from Europe which are now not affected pricewise, are I-beams, wide flange sections and wire nails.

Sheets, Strip . . .

Sheet and Strip Prices, Page 120 & 121

Cleveland—Sheet specialties, such as silicon and galvanized sheets, are moving at a better rate than are hot-rolled and cold-rolled sheets, but tonnage movement of the latter is substantial. In fact, mills report they have booked some fairly large tonnages of both hot and cold-rolled. The trouble is, however, orders are not as numerous as the mills would like.

Galvanized sheets have been under demand pressure for some time past, reflecting seasonal building needs, but more immediately the placing of tonnage for the government grain storage bin program.

Boston—Not until next month are sheet and strip orders likely to indicate the extent of fourth quarter improvement in demand for flat-rolled. Volume entered for September lags, mostly of a fill-in type. August schedules are open for additional tonnage, galvanized excepted. October appears to be the best most producers can do on galvanized.

New York—Demand for hot-rolled

STEEL IMPORT PRICES

(Base, per 100 lb, landed, duty paid)

	North Atlantic	South Atlantic	Gulf Coast	West Coast*
Deformed Bars, Intermediate, ASTM-A-305	*$4.95*	*$4.95*	*$4.85*	*$5.23*
Bar Size Angles	*4.65*	*4.65*	*4.55*	*4.93*
Structural Angles	*4.65*	*4.65*	*4.55*	*4.93*
I-Beams	4.50	4.50	4.40	4.73
Wide Flange Beams	4.80	4.80	4.80	5.08
Sheet and Plate, 10 gage, 11 gage, 5' x 10'	5.50	5.50	5.45	5.78
Furring Channels, C.R., 1000 ft, ¼ x 0.30 lb per ft	*26.80*	*27.00*	*26.80*	*27.60*
Barbed Wire	*7.30*	*7.30*	*7.30*	*7.63*
Merchant Bars	*5.00*	*5.00*	*5.00*	*5.33*
Hot-Rolled Bands	*5.15*	*5.15*	*5.10*	*5.43*
Wire Rods, Thomas Commercial No. 5	*4.80*	*4.87*	*4.85*	*5.12*
Wire Rods, O-H, Cold Heading Quality No. 5	5.23	5.30	5.28	5.55
Bright Common Wire Nails, 8d	6.85	6.95	6.90	7.15

*Not including $2.20 per net ton customarily charged in most West Coast ports for wharfage and handling.

Sizes O.D.	Wgt/Foot/Lb	Gulf Port	West Coast	Vancouver
Seamless A.P.I. Casing, Grade J-55:				
5½ in.	15.5	$1.47/ft	$1.51/ft	$1.32/ft
7 in.	23	2.10/ft	2.17/ft	1.90/ft
Seamless N-80 Casing:				
5½ in.	17	1.94/ft	2.00/ft	1.75/ft
7 in.	23	2.50/ft	2.70/ft	2.36/ft
Seamless J-55 Tubing:				
2⅜ in.	4.7	0.60/ft	0.63/ft	0.55/ft
2⅞ in.	6.5	0.80/ft	0.83/ft	0.73/ft

Sources of shipment: Western continental European (Schuman Plan) countries.

Bethlehem Fabricates Steelwork for Unusual Truss Roof

This unusual steel truss roof was designed for a bulk storage building adjacent to a grain elevator in Vancouver, Wash. It is a practical and relatively economical way to protect many thousands of bushels of grain from the elements. The trusses are 120 ft in length. This steelwork, 185 tons in all, was fabricated by Bethlehem Pacific Coast Steel Corp.'s fabricating works in Seattle

sheets is still running ahead of that for cold-rolled. However, the overall volume in these grades is disappointing to sellers, who report July as the slowest month this year with little pickup in immediate prospect. Relatively, galvanized sheets are moving best of all the major sheet items. Demand for galvanized is fairly sustained at June levels, and delivery promises are more extended than in either hot or cold-rolled sheets.

Philadelphia—Except in galvanized, sheet business in the major tonnage items is disappointing to producers. July orders for hot and cold-rolled sheets were the lightest so far this year, with no important improvement in immediate prospect. At least one major producer looks for demand in the plain carbon grades in the second half to be off from that in the first half, reflecting, in part, lighter automotive requirements. All this despite the fact that excess consumer inventories have been fairly well worked off.

Galvanized is somewhat a different story. Business is reasonably good, and delivery schedules are more extended than in hot and cold-rolled sheets. In fact, some mills in the grain belt, with freight rates advantageous for storage bin tonnage, are booked solidly into the fall with that and other demands. Eastern producers can make shipments within four to six weeks, probably nearer four, but even that is more extended on an average than for hot-rolled and cold-rolled sheets. High grade electrical sheets are reported to be in tight supply.

Pittsburgh—Automakers' purchases remain low. Buying may be cut back further before new model production begins in late third quarter. Warehouse and appliance demand will be off the balance of this month. In late August the amount of new September orders will become apparent. Producers expect a gradual upturn beginning at that time, predictions as to volume being guarded.

Chicago — Except for galvanized, the whole sheet line is in easiest position for many months. Chief defection is the automobile industry which is in the first stages of conversion to new models and farm equipment which had reduced manufacturing schedules in keeping with declining sales. Galvanized is close to capacity production because of new grain bin orders and heavy general construction needs.

Cincinnati — Weakness has developed in second sheets with prices varying widely. Competition is keen. All gages are selling well. Fabricators seem to have exhausted inventories.

Wire . . .

Wire Prices, Page 122

Denver — Colorado Fuel & Iron Corp. reports its Morgan rod mill at the Pueblo plant reached the 1-million-ton mark in May this year, climaxing a series of record-breaking performances.

Boston—One significant trend in wire buying is that rod orders for August are slightly ahead of the previous two months. Finished wire demand has not recovered. August schedules are not filled. Shipments in July were off and September bookings are slow. Prompt delivery is wanted on the bulk of orders placed.

Steel Bars . . .

Bar Prices, Page 120

Boston—Predicated on slow orders for September, carbon and alloy bar volume is not expected to improve much before October, buying to start after Labor Day. Producers will be in position to meet prompt delivery on the bulk of sizes from stock, notably cold-finished screw machine stock.

Substantial stainless volume will be bought for 11 minesweepers to be built in New England yards, notably for chain.

New York—Hot-rolled carbon bar sellers believe orders are now about as low as they will go this year—not, however, that they anticipate early improvement. The fact is, they see little quickening before fall. This applies in a slightly lesser degree to cold-finished bars and in greater degree to alloy bars, both hot and cold.

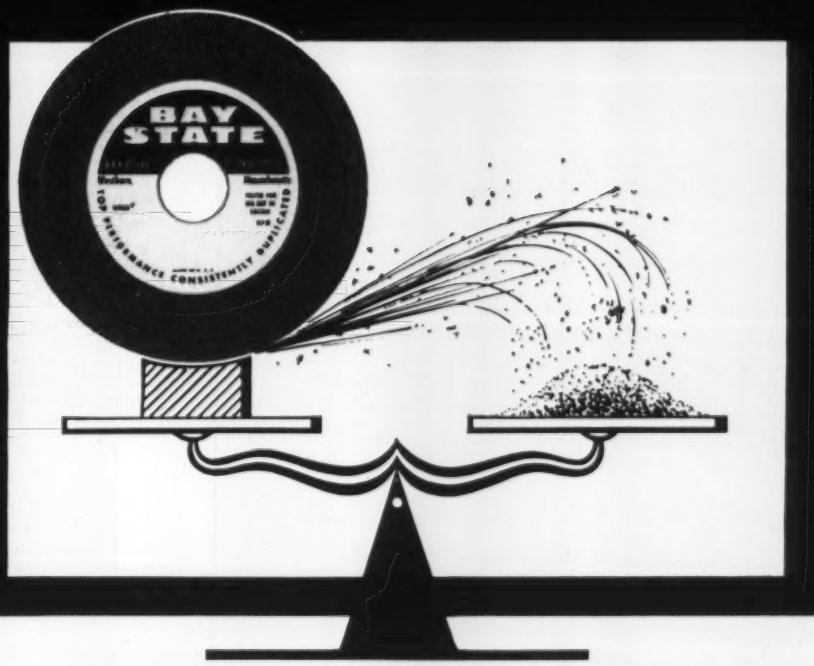
Philadelphia—Bar business is spotty. Hot-rolled carbon grades are moving about as slowly as at any time this year and demand for the alloys, both hot and cold, is lagging badly. Cold-drawn carbon bar business is reported fair in some quarters, very poor in others. Definitely, the over-all situation in cold-drawn is not good.

Pittsburgh — Fabricators' vacation periods continue to cut a large slice into demand for bars. Sales to farm equipment, appliance and automaking industries remain slim. Aside from gradual replenishment of inventories, no change has taken place in demand in the last month.

Cincinnati—Hot and cold-finished bars are moving well. Warehousemen are anticipating better sales this month.

Cleveland—Sluggish demand for merchant steel bars is thought likely to continue through this month. Automotive requirements are seen restricted until builders are ready to go ahead on new models. General

BUY PERFORMANCE



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42

manufacturing inventories have been pretty well worked off and expectations are fall buying will be substantial, once it gets under way.

Chicago—Sagging demand for bars places this product in rapid shipment category for most producers. This applies both to hot-rolled and cold-finished.

Semifinished Steel . . .

Semifinished Prices, Page 120

Youngstown — Youngstown steel operating rate holds unchanged at 64 per cent of capacity. Three bessemer plants, 42 open hearths and 12 blast furnaces are operating.

Plates . . .

Plate Prices, Page 120

Phidalephia—Platemakers see little, if any, improvement in demand this month over July. Consumer inventories are now below normal, in most cases, and eventually this will have a stimulating effect on demand. But producers doubt if it will be much of a factor this month, especially with the continued lag in railroad requirements, shipwork and other important consuming groups.

Boston—With carbon grade deliveries possible in two weeks and under, plate fabricators are buying only tonnage enough to meet what is on their books. Among plate fabricators competition is notably sharp and estimates going in for finished structures are on close margins. The Harrisburg, Pa. mill increased prices Aug. 1. The Claymont, Del. producer shares substantially in Navy contracts opened over the last few weeks. For the India Supply Mission bids close on 19,045 tons Aug. 26.

New York—Plate buying still lags with local shipyards buying sparsely and little new coming out from the railroads and railroad equipment builders.

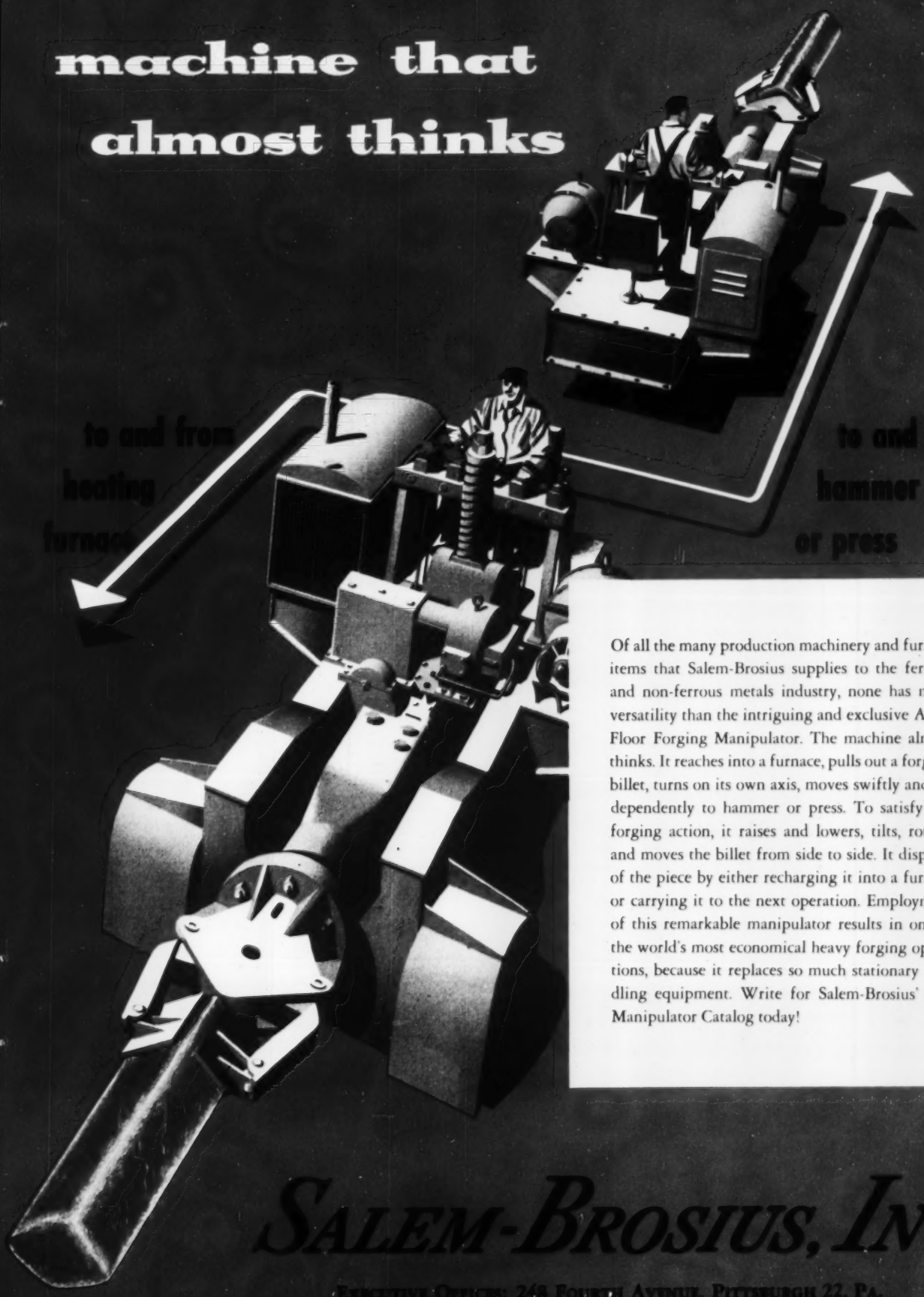
Pittsburgh—A gradual decline continues in some consuming fields and plate requirements drop as a result. Government recommendations for roadbuilding programs should affect plate sales later, but currently business is slow. There are no signs of increased needs from shipbuilders or railroads.

Los Angeles — A substantial increase in inquiries leads platemakers to predict an active second half. One producer's July inquiries exceeded the two previous months.

Seattle—American Pipe & Construction Co., Portland, Oreg., is low at $1,276,525 for fabricating eight

(*Please turn to page* 133)

machine that almost thinks



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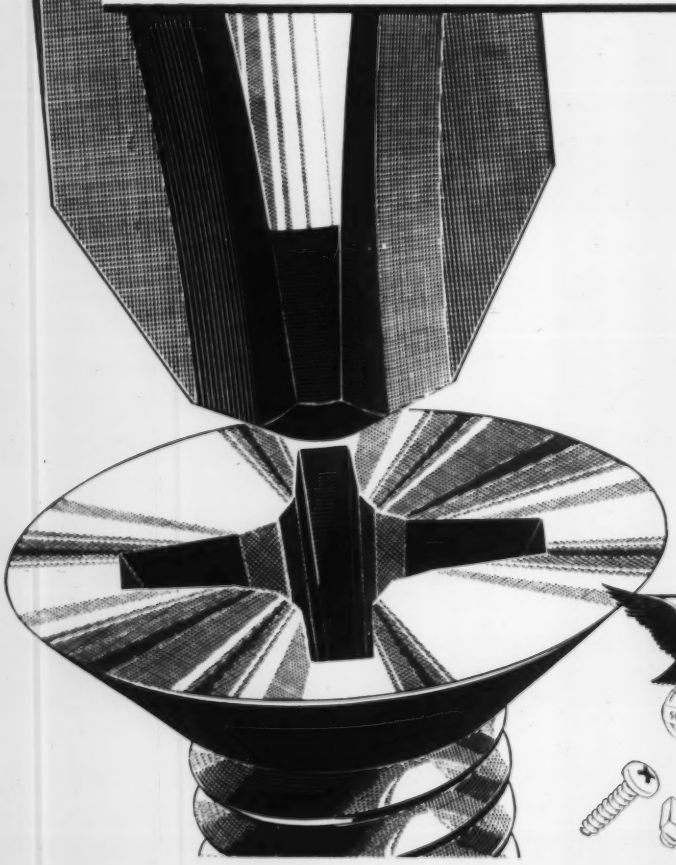

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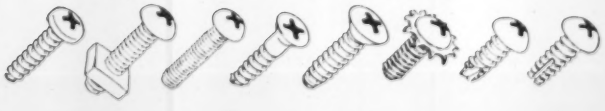


(*Concluded from page* 130)

steel storage tanks, involving about 1700 tons of plates, for the Commission of Public Docks, Portland. Award is pending. Same firm has been awarded a $27,622 contract for a steel reservoir for the Bureau of Reclamation's Avondale Gardens irrigation project, Bonner county, Idaho. U. S. Engineer opened bids for a fueling system, Elmendorf Air Base, Alaska, involving two underground storage tanks, capacity 100,000-gal.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 120

Seattle—Rolling mills are back on full schedules following shutdowns of a couple weeks for vacations and overhaul by Northwest Steel Rolling Mills Inc., and Oregon Steel Mills, Portland.

Tin Plate . . .

Tin Plate Prices, Page 122

Washington—Shipments of metal cans in May totaled 317,344 net tons, off about 2 per cent from April, when shipments aggregated 323,903 tons. However, they were up from 305,205 net tons in May, 1953, and brought the total for the first five months up to 1,457,416 net tons, against 1,411,211 in the corresponding period of last year.

Pittsburgh—Shipments in July are 10 to 20 per cent lower than peak June rates. Producers expect a gradual levelling-off in second half demand.

Iron Ore . . .

Iron Ore Prices, Page 137

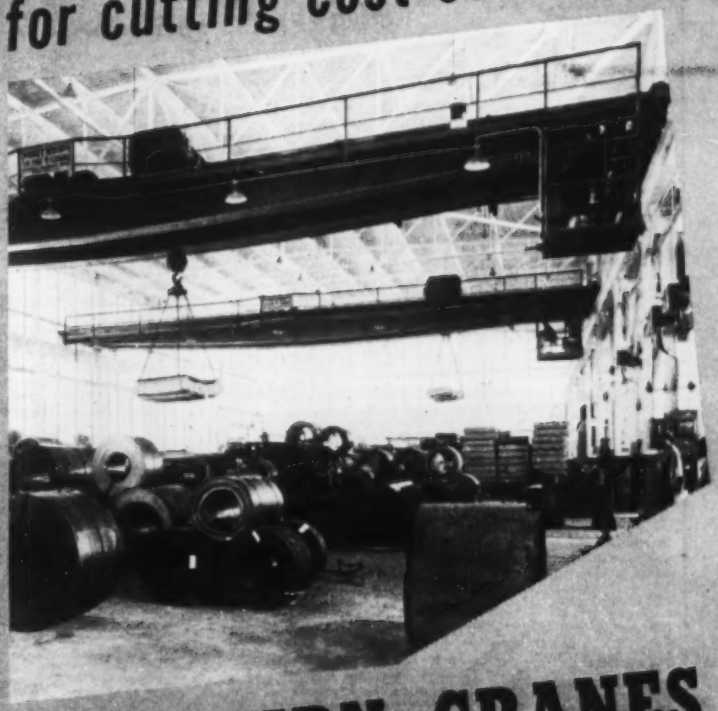
Cleveland—The weekly movement of iron ore from the head of the lakes continues to fall far below that of a year ago. Shipments in the latest week, that ended July 26, totaled 2,303,077 gross tons. This was more than 1 million tons under the 3,318,272 tons brought down in the corresponding week of 1953. Cumulative shipments this season to July 26 amount to 31,231,379 tons against 48,084,854 in the like period of the 1953 shipping season.

San Francisco—Kaiser Steel Corp. has placed into operation at its Eagle Mountain, Calif., mines a plant designed to extract maximum amount of iron ore from deposits. The higher grade ore resulting from the operation will bring about transportation savings and will permit new operating efficiencies.

The average iron content of the ore mined at Eagle Mountain is 51

(*Please turn to page* 137)

for cutting cost corners . . .



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CURRENT FERROALLOY QUOTATIONS

Prices as reported to STEEL

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton $86, Palmerton, Pa.; $87 Clairton and Duquesne, Pa.
(16 to 19% Mn) $84 per ton, Palmerton, Pa.; $85 per ton, Clairton and Duquesne, Pa.

Standard Ferromanganese: (Mn 74-76%, C7% approx.) Base price per net ton $200, Clairton, Duquesne, Johnstown and Sheridan, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; and Portland, Oreg.; add or subtract $2.00 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively.

(Mn 79-81%) Lump $208 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 76%, fractions in proportion to nearest 0.1%.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max, 0.07% C, 27.95c per lb of contained Mn, carload packed 28.7c, ton lots 29.8c, less ton 31.0c. Delivered. Deduct 0.5c for max 0.15% C grade from above prices, 1c for max 0.30% C, 1.5c for max 0.50% C, and 4.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese metal, 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 36.2c per lb of metal; packed, 36.95c; ton lot 38.45c; less ton lots 40.45c. Delivered. Spot, add 2c.

Electromanganese: Min carloads, 30c; 2000 lb to min carloads, 35c; 250 lb to 199 lb, 34c; less than 250 lb, 37c. Premium for hydrogen-removed metal, 0.75c per lb, f.o.b. cars, Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-85%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 11.00c per lb of alloy, carload packed, 11.75c, ton lots 12.65c, less ton 13.65c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, C.l., lump, bulk 24.75c per lb of contained Cr; c.l. packed 25.65c, ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload, lump, bulk, max, 0.025% C (Simplex) 34.50c per lb contained Cr, 0.03% C 36.50c, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c, 2% C 32.75c. Carload packed add 1.1c, ton lot 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High-Carbon: (Cr 62-66%, C 5-7%). Contract, c.l. 8 M x D, bulk, 36.25c per lb contained Cr. Packed, c.l. 37.15c, ton 28.50c, less ton 30.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low-Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, 8 M x D, 18.25c per lb of alloy; ton lot 19.2c; less ton lot, 20.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.06% max). Contract, carload, lump, 4" x down and 2" x down, bulk, 24.75c per lb of contained chromium plus 10.8c per pound of contained silicon; 1" x down, bulk 25.25c per pound of contained chromium plus 11c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Chromium Metal: (Min 97% Cr and 1% Fe) contract, 1" x D; packed, max 0.50%, carload $1.12, ton lots $1.14; less ton $1.16. Delivered. Spot, add 5c. Prices on 0.10 per cent carbon grade, add 4c to above prices.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max, C 3-3.5% max). Contract, any quantity, $3.00 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 35-55%, Si 2-3.5% max, C 0.5-1% max). $3.10. **Primos and High Speed Grades** (V 35-55%, Si 1.50% max, C 0.20% max) $3.20.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si, packed 21.40c; ton lot 22.50c f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 10.80c per lb of contained Si, carload packed 12.40c, ton lot 13.85c, less ton 15.5c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.7c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 12.2c per pound contained silicon; carload packed 13.55c; ton lots, 14.75c; less ton, 16.1c, delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 13.8c per lb of contained Si, carload packed 15.1c, ton lot 16.25c, less ton 17.5c. Delivered. Spot, add 0.8c.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.0c per lb of contained Si, carload packed 18.2c, ton lot 19.15c, less ton 20.2c. Delivered. Spot, add 0.25c.

Silicon Metal: (Mn 97% Si and 1% max Fe) C.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.25c per lb of alloy, ton lots packed 10.15c, 200 to 1999 lb 10.50c, smaller lots 11c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-43%, Fe 40-45%, C 0.20% max). Contract, c.l. lump, bulk 8.0c per lb of alloy, c.l. packed 8.75c, ton lot 9.5c, less ton 10.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 20.25c per lb of alloy, ton lot 21c, less ton 22.25c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per pound; Grade B (14-18% B) $1.20; Grade C (19% min M) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carboram: (B 1 to 2%) Contract, lump, carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Deld. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3¾ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 16.25c per lb of briquet, carload packed 16.95c, ton 17.75c, less ton 18.65c. Deld. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 12.45c per lb of briquet, c.l. packaged 13.25c, ton lot 14.05c, less ton 14.95c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ⅝ lb of Si). Contract, c.l. bulk 12.65c per lb of briquet, c.l. packaged 13.45c, ton lot 14.25c, less ton 15.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.3c per lb of briquet. Packed c.l. 7.10c, ton lot 7.9c, less ton 8.8c. Delivered. Spot, add 0.25c.

(Small size—Weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.45c. Packed c.l. 7.25c, ton lot 8.05c, less ton 8.95c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 5000 lb W or more $3.80 per lb of contained W; 2000 lb W to 5000 lb W, $3.90; less than 2000 lb W, $4.02, f.o.b. Niagara Falls, N. Y.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max. C 0.4% max). Contract, ton lot, 2" x D, $9.50 per lb of contained Cb, less ton $9.55. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D, $4.75 per lb of contained Cb plus Ta, deld.; less ton lots $4.80.

Silicax Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed, ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.50c per lb of alloy; ton lots 18.50c; less ton lots 20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

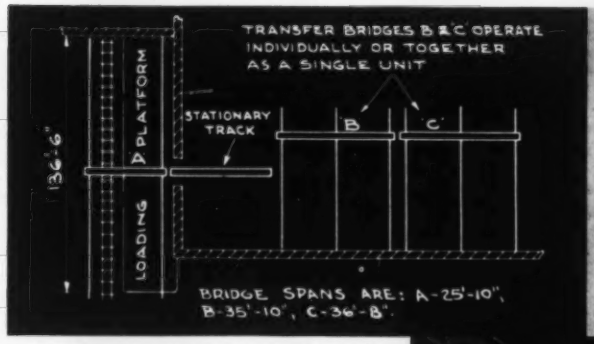
V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 16.6c per lb of alloy; ton lots 18.10c; less ton lots 19.35c, f.o.b. Niagara Falls; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al; bal. Fe). Lump, carload, bulk 15.50c. Packed c.l. 16.50c, 2000 lb to c.l. 16.75c, less than 2000 lb 17.25c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $4 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $90 per gross ton.

Ferromolybdenum: (55-75%). Per lb contained Mo, f.o.b. Langeloth, Pa., $1.32 in all sizes except powdered which is $1.41; Washington, Pa., furnace, any quantity $1.32.

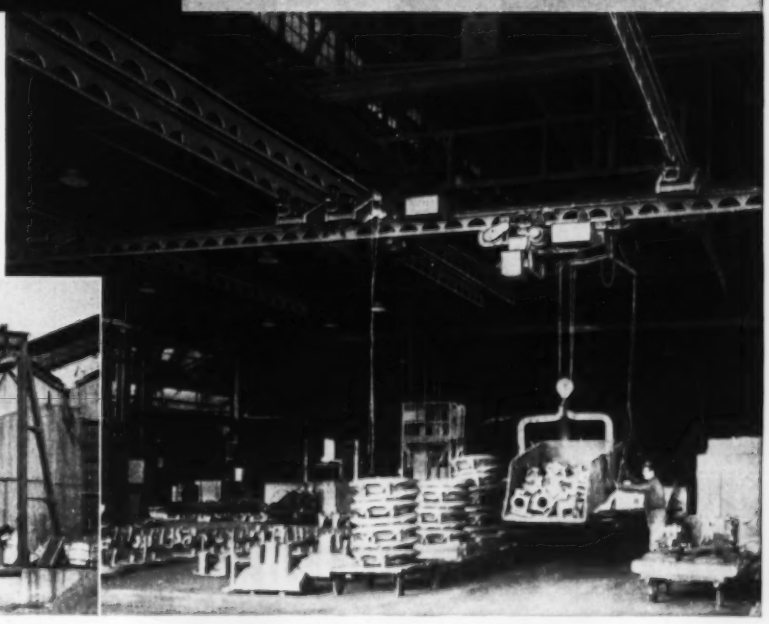
Technical Molybdic-Oxide: Per lb contained Mo, f.o.b. Langeloth, Pa., $1.14 in cans; in bags, $1.13, f.o.b. Langeloth, Pa.; Washington, Pa., $1.13.

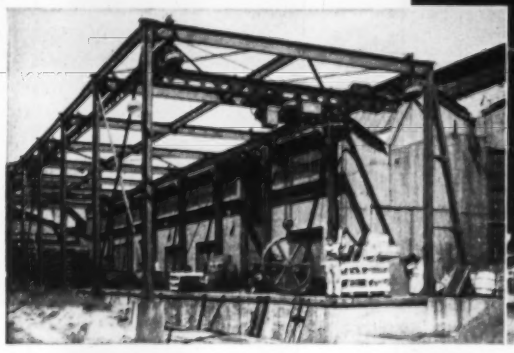


5 TON TRANSFER BRIDGE SYSTEM with Advanced Features

(At right) The two inside bridges are shown interlocked and being operated as a single unit. Either bridge may be operated individually. All control is centralized in the push button station suspended from the carrier.

(Below) The outside bridge serving the loading dock interlocks with inside track at doorway.





CASTINGS can be picked up at any point in the large shipping room, and loaded onto railroad cars or trucks at the outside of the building with this efficient 5-ton transfer bridge system. The bridges and stationary track interlock, enabling the motor-driven carrier to operate on any bridge.

The two inside bridges can be operated individually or together as a single unit, and controlled completely by means of the pendant push-button station on the carrier. This permits operating the bridges separately for local work in the bays each covers. When transporting materials from one bay to the other, time is saved by operating the bridges interlocked as a single unit because then it is not necessary to travel the bridges extra distances in order to interlock them for transfer of a carrier.

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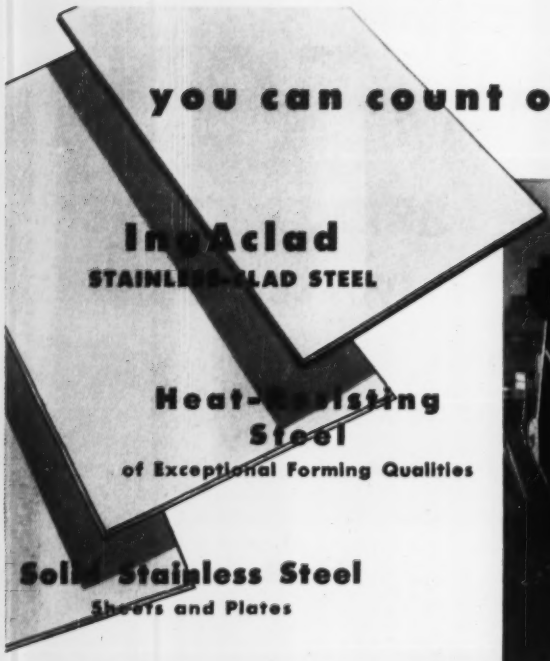

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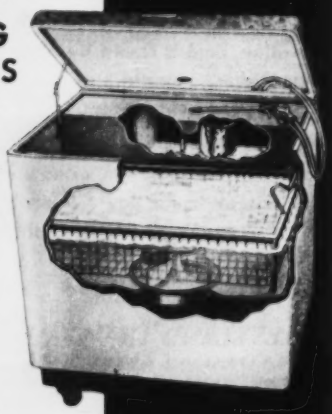

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Model JR 20
(20 gallon capacity)
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Less gun and basket
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UP TO 50,000 GALLON CAPACITY

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(*Concluded from page* 133)

per cent. After processing through the new facilities, the ore will average 56 per cent iron content.

First step in the process is a magnetic unit which attracts high grade magnetic ore. The remaining ore (hematite) then is sent through a liquid solution where the higher grade ore, which is heaviest, drops to the bottom and is taken off and combined with the high grade magnetite ore. The ore with lower iron content is floated away by the solution and sent to a waste stockpile.

The plant, constructed by the Kaiser Engineers Division, Henry J. Kaiser Co., is designed to process more than 2 million tons of ore a year.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 137

Cleveland — Foundry coke sellers note a slight quickening in demand with foundry operations rising following completion of summer vacation shutdowns. Most of the foundries in this area have resumed on about the same level of production as prevailed prior to the shutdown.

Coke supplies are adequate to meet current needs but steady expansion in buying is expected as the fall nears. Coke sellers have been meeting stiff competition from coke offered by a Pittsburgh district producer.

Chicago—Demand for foundry coke is light and ovens are producing it only as needed and on extended coking time cycles. Little pickup in sales is anticipated before September and fourth quarter.

Structural Shapes . . .

Structural Shape Prices, Page 120

New York—June structural steel awards totaled 219,306 net tons, against a revised figure for May of 199,383 tons, reports the American Institute of Steel Construction. This brought bookings for the first half of the year up to 1,241,534 net tons, which compares with 1,555,318 in the first half of last year and 1,086,365 as an average of the first half totals in the years 1947 to 1950 inclusive.

June shipments amounted to 290,262 net tons against a revised figure for May of 253,886. Shipments during the first six months amounted to 1,621,793 net tons, against 1,560,470 in the like period of 1953, and 1,103,515 as an average of the first half figures of the years 1947-50 inclusive.

Backlogs as of June 30 amounted to 1,390,613 net tons, against 2,152,764 a year previously.

New York — Bridge work dom-

ORES–COKE–REFRACTORIES

Prices as reported to STEEL; changes shown in italics.

ORES

Lake Superior Iron Ore

(Prices effective July 1, 1953, and thereafter; gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Old range bessemer	$10.30
Old range nonbessemer	10.15
Mesabi bessemer	10.05
Mesabi nonbessemer	9.90
Open-hearth lump	11.15
High phosphorus	9.90

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon which were in effect on June 24, 1953, and increases or decreases after such date are for buyer's account.

Eastern Local Iron Ore

Cents per unit deld. E. Pa.

Foundry and basic 56-62% concentrates contract	17.00-18.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%	20.00
North African hematite (spot)	20.00-22.00
Brazilian iron ore, 68-69% (spot)	25.00

Tungsten Ore

Net ton unit, before duty

Foreign Wolframite, good commercial quality	*$24.00-$25.00*
Domestic scheelite, mine	63.00

Manganese Ore

Mn 48%, nearby, $1.02-$1.05 per long ton unit c.i.f. U. S. ports, duty for buyer's account; 46-47%, $0.95-$0.97.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48% 2.8:1	$40.00-$42.00
48% 3:1	44.00-46.00
48% no ratio	32.00-34.00

South African Transvaal

44% no ratio	$21.00-$22.00
48% no ratio	34.00

Domestic

(Rail nearest seller)

48% 3:1	$39.00

Molybdenum

Sulphide concentrate, per lb, Mo content mines, unpacked	$1.00

Antimony Ore

Per unit of 8lb content, c.i.f. seaboard

50-60%	$2.40-$2.80
65% min.	$3.40-$3.50

Vanadium Ore

Cents per lb. V_2O_5 content, deld. mills Domestic	31.00

REFRACTORIES

Fire Clay Brick

High-Heat Duty: Pueblo, Colo., $89; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., Woodbridge, N. J., $109; Salina, Pa., $114; Niles, O., $120; Los Angeles, Pittsburg, Calif., $132.30.

Silica Brick

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., $115; Warren, O., Hays, Pa., $120; Niles, O., $120; E. Chicago, Ind., Joliet, Rockdale, Ill., $125; Cutler, Utah, $116.55; Los Angeles, $122.85.

Insulating Fire Brick

2300° *F:* Massillon, O., $178.50; Clearfield, Pa., $213; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $206; Vandalia, Mo., $214.10; Portsmouth, O., $207.50; Bessemer, Ala., $212.80.

Ladle Brick

Dry Pressed: Bessemer, Ala., $54.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Wellsville, O., $77.50; Mexico, Mo., $73.50; Clearfield, Pa., Portsmouth, O., $83; Perla, Ark., $109; Los Angeles, $110.25; Pittsburg, Calif., $111.30.

Sleeves

Reesdale, Pa., $139.70; Johnstown, Pa., $140; Clearfield, Pa., $148.50; St. Louis, $151.80; Athens, Tex., $155.

Nozzles

Reesdale, Pa., $223.50; Johnstown, Pa., $229.20; Clearfield, Pa., $241.40; St. Louis, $247.10; Athens, Tex., $247.70.

Runners

Reesdale, Pa., $174; Johnstown, Pa., $177.80; Clearfield, Pa., $185.50; St. Louis, $187.30; Athens, Tex., $191.80.

High-Alumina Brick

50 *Per Cent:* Clearfield, Pa., St. Louis, Mexico, Mo., $179; Danville, Ill., $169.30.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $223.00; Danville, Ill., $213.20.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $225; Danville, Ill., $258; Clearfield, Pa., $253.

Dolomite

Domestic, dead-burned bulk; Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Nario, Gibsonburg, Woodville, O., $14.50; Thornton, McCook, Ill., $14.60; Dolly Siding, Bonne Terre, Mo., $13.65.

Magnesite

Domestic, deadburned bulk; Luning, Nev., $38.

METALLURGICAL COKE

Price per net ton

Beehive Ovens

Connellsville, furnace	$14.50-$15.00
Connellsville, foundry	16.50-17.00

Oven Foundry Coke

Kearney, N. J., ovens	$24.00
Everett, Mass., ovens	
New England, deld.	*28.05
Chicago, ovens	24.50
Chicago, deld.	26.00
Terre Haute, ovens	24.05
Milwaukee, ovens	25.25
Indianapolis, ovens	24.25
Chicago, deld.	26.12
Cincinnati, deld.	25.85
Painesville, O., ovens	25.50
Cleveland, deld.	27.43
Erie, Pa., ovens	25.00
Birmingham, ovens	22.65
Cincinnati, deld.	27.58
Buffalo, ovens	25.00
Buffalo, deld.	26.25
Lone Star, Tex., ovens	18.50
Philadelphia, ovens	23.00
Swedeland, Pa., ovens	23.00
St. Louis, ovens	
St. Louis, deld.	26.00
St. Paul, ovens	23.75
Portsmouth, O., ovens	24.00
Cincinnati, deld.	26.62
Detroit, ovens	25.50
Detroit, deld.	26.50
Pontiac, deld.	27.06
Saginaw, deld.	28.58

*Or within $4.55 freight zone from works.

COAL CHEMICALS

Spot, cents per gallon, ovens

Pure benzol	40.00
Toluol, one deg	32.00-35.00
Industrial xylol	32.00-35.00

Per ton, bulk, ovens

Sulphate of ammonia	$42-$45
Birmingham area	42.00†

†With port equalization against imports.

Cents per pound, producing point

Phenol 40 deg. (U.S.P.), tank cars	18.00
c.l. drums	19.00
l.c.l. drums	19.50

FLUORSPAR

Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $44; 70%, $42.50; 60%, $38. Imported, net ton, duty paid, metallurgical grade, $35-$36.

ELECTRODES

(Threaded with nipple unboxed f.o.b. plant)

GRAPHITE

Inches Diam	Length	Per 100 lb
2	24	$43.50
2½	30	28.00
3	40	27.25
4	40	26.00
5¼	40	25.75
6	60	23.25
7, 8, 9, 10	60	21.00
12, 14	72	20.50
16	72	20.00
17	60	20.50
18	72	20.50
20	72	20.00

CARBON

40	100	$8.95
40, 35, 30	110	8.95
30	84	9.10
24	96	8.90
24	72, 84	9.10
20	90	8.96
20	84	9.10
17	72	9.10
17	60	9.50
14	72	9.50
14, 12, 10	60	10.30
8	60	10.55

inates pending construction, with bids closed last week on 14,800 tons for the Kingston-Rhinecliff bridge across the Hudson river. Backlogs at most fabricating shops are steadily increasing, although overtime operations are the general rule. Wide flange beam supply is tightening again, but not to the extent—so far at least—of a year ago.

Boston—More district fabricating shops are estimating bridge tonnage, mostly projects under 300-tons. A Buffalo shop is figuring more work in New England after fabricating the bulk of 17,000 tons for Maine turnpike extension spans. This enhances competition.

Philadelphia — Substantial amount of structural work is being figured and a fair tonnage is being placed, including 6200 tons for a state bridge in Luzerne county, Pa. This job will be fabricated by the New York Shipbuilding Corp, Camden, N. J., which, in the absence of important ship work, is diversifying its operations.

Seattle — Structural awards last week exceeded 1000 tons. Several sizable projects involving more than 3000 tons are pending, including 500 tons for bridges in Alaska.

Canada . . .

Toronto, Ont.—Following the hectic rush of business during and since the war, the Canadian steel industry is getting back to more normal status. Production and demand declined noticeably in the first six months of this year, most consumers in the period drawing heavily on inventories.

Many branches of consuming industry—automotive, agricultural implements, makers of household equipment, etc.—are operating with substantially reduced staffs.

Hamilton, Ont.—Dominion Foundries & Steel Ltd. plans construction of a 56-inch cold strip mill at a cost of $3,500,000.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

6200 tons, state bridge, Luzerne county, Pa., to New York Shipbuilding Corp., Camden, N. J.; contract sublet through Penn Central Quarry, Stripping & Construction Co., Hazelton, Pa., general contractor.

1300 tons, incinerator, Department of Public Works, East 73rd St., Manhattan, New York, through Psaty & Fuhrman, general contractors, to Schacht Steel Construction Inc., that city.

750 tons, addition, Scott Paper Co. plant, Everett, Wash., to Bethlehem Pacific Coast Steel Corp., Seattle.

420 tons, high school, Haverford Township, near Philadelphia, to Grays Metal Works, Philadelphia.

300 tons, addition, grain handling facilities, Hanford St. elevator, Seattle Port Commission, to Pacific Car & Foundry Co., Seattle; Noble W. White, Seattle, general contractor.

265 tons, 6-span girder bridge over New Haven railroad, Norwich, Conn., to American Bridge Division, U. S. Steel Corp., Pittsburgh, through Brunalli Construction Co., Southington, Conn., general contractor.

130 tons, bridge, Bureau of Roads, Washington state, to American Bridge Division, U. S. Steel Corp., Portland, Oreg.; A. V. Phillips, Seattle, general contractor.

108 tons, bridge, Lancaster county, Pa., to High Welding Co., Lancaster, Pa.

STRUCTURAL STEEL PENDING

2000 tons, changes to approaches and reconstruction of the main span, Third Ave. bridge over the Harlem river, Department of Public Works, New York, bids closed July 28.

1300 tons, superstructure, Walnut street state bridge, Wilmington, Del.; bids Aug. 18.

1200 tons, estimated, 300 x 1800-ft warehouse, Campbell Soup Co., Camden, N. J.; bids asked.

500 tons, bridge, Alaska highway over Copper river; general contract by Alaska Road Commission to B. E. C. K. Constructors Inc., Seattle, and McLaughlin Inc., Great Falls, Mont., joint contractors and low $2,736,389; contract involves 14.3 miles of road.

500 tons, Rosedale Agassiz bridge, Fraser river, British Columbia; Northern Construction Co. and J. W. Stewart Ltd., Vancouver, B. C., low $1,699,057 for substructure; Dominion Bridge Co., Vancouver, low $372,727 for approach steel work; bids to British Columbia Highways & Bridges Authority, Victoria, B. C.

155 tons, Letterkenny Ordnance Depot, Chambersburg, Pa.; bids in.

100 tons, control and oil houses, Chief Joseph dam; John M. King, Tacoma, Wash., low $112,032, to Bonneville Power Administration, Portland, Oreg.

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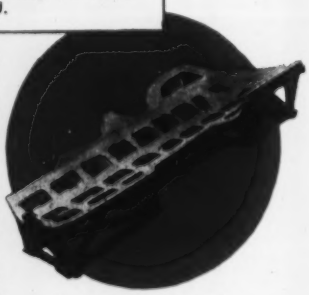

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Model "CA" Capacity 1 inch

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KARDONG BROTHERS, INC.
MINNEAPOLIS 13, MINN.

100 tons, plant addition, bids in to Olympia Brewing Co., Olympia, Wash.

REINFORCING BARS . . .

REINFORCING BARS PLACED

225 tons, piling foundations, refinery project at Anacortes, Wash., for Shell Oil Co., to Bethlehem Pacific Coast Steel Corp., Seattle.

160 tons, military installations, Washington state and Middleton Island, Alaska, to Bethlehem Pacific Coast Steel Corp., Seattle; Henrik Valle, Seattle, and Morrison-Knudsen Co., Seattle, general contractors.

142 tons, Washington state King county bridges, to Bethlehem Pacific Coast Steel Corp., Seattle; Anderson Bridge Co., Tacoma, Wash., low $176,087, general contractor.

120 tons, plant addition, Everett Pulp & Paper Co., Everett, Wash., to Bethlehem Pacific Coast Steel Corp., Seattle; Howard S. Wright & Co., Seattle, general contractors.

100 tons, Seattle plant, Longview Fiber Co., to Bethlehem Pacific Coast Steel Corp., Seattle; Howard S. Wright & Co., Seattle, general contractors.

73 tons, Washington state Snohomish county highway project, to Bethlehem Pacific Coast Steel Corp., Seattle.

REINFORCING BARS PENDING

1000 tons, approaches, Chehalis river bridge, Washington state; general contract to Manson Construction & Engineering Co., Seattle, low $1,283,265.

500 tons, railroad overpass, Mt. Vernon, Wash.; general contract to Dahlgren Construction Co., Seattle, low $434,574.

180 tons, Alaska Road Commission, Copper river bridge; general contract placed.

165 tons, one-quarter inch, round reinforcing in 500-pound coils, plain, for Philippines; bids to Bureau of Public Roads, Washington.

100 tons, Washington state highway projects; bids to Olympia Aug. 3.

100 tons, military installation,, Kingston Wash.; general contract to Hall-Atwater.

75 tons, Washington state highway projects, Grant and Walla Walla counties; general contracts respectively to Long Construction Co., Warden, Wash., low $67,803, and Clifton & Applegate, Yardley, Wash., low $120,962.

PLATES . . .

PLATES PLACED

100 tons, steel water reservoir, Avondale Gardens irrigation project, Bonner county, Idaho, to American Pipe & Construction Co., Portland, Oreg., low $27,622 to Bureau of Reclamation.

PLATES PENDING

1700 tons, eight tanks, 5.4 million bushel grain capacity; American Pipe & Construction Co., Portland, Oreg., low $1,276,525 to Commission of Public Docks, Portland, Oreg.

370 tons, eight vegetable oil storage tanks; Hammond Iron Works, Provo, Utah, low, $188,448, to Port of Seattle.

PIPE . . .

CAST IRON PIPE PLACED

400 tons, 6 and 8-inch, system expansion, Valdez, Alaska, to Pacific States Cast Iron Pipe Co., Seattle; general contract to S. S. Mullen Inc., Seattle, low $406,958.

CAST IRON PIPE PENDING

500 tons, 16 to 4-inch, Kodiak, Alaska, project; bids in to Alaska Public Works.

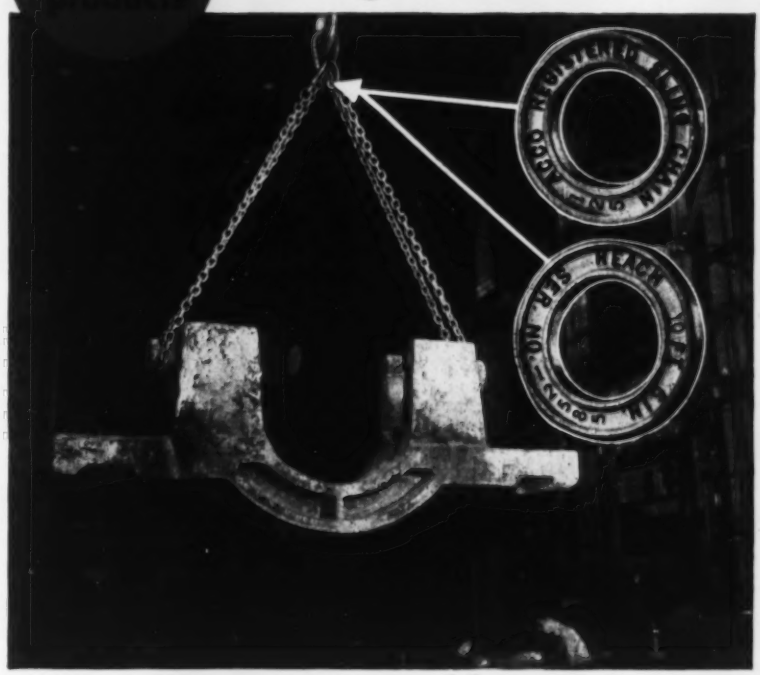
500 tons, 74,600 feet mains, accessories, river crossing, etc., Fairbanks, Alaska, system; bids to Alaska Public Works, Juneau, Aug. 11.

150 tons, 11,000 feet 8 to 4-inch and fittings; bids to Helen Nickell, clerk, Chelan, Wash., Aug. 6; Gray & Osborne, Yakima, Wash., engineers.

125 tons, 8 and 6-inch; bids to Puyallup, Wash., in August.

100 tons, 15,000 feet various sizes, for Midway Water District, Medford, Oreg.; bids to G. G. Sugg, chairman, Aug. 9; plans by Cornell, Howland, Haynes & Merryfield, Corvallis, Wash.

ACCO Registered* Sling Chains



What would it cost you if you dropped this casting?

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That's why you must be sure of the slings you use. That's why we suggest ACCO *Registered* Sling Chains with their inherent safety. For instance, a ⅜" double ACCO *Registered* Sling Chain used as a double-basket at a 60° angle has a working load limit of 11,400 pounds, almost six tons! Furthermore—it was proof-tested—overall—with a load equivalent to *twelve tons.*

With all this strength, ACCO *Registered* Sling Chains are light in weight . . . easy for your men to handle. That's because they're made of alloy chain which provides strength, great strength, with less weight.

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4 Actual field service test of each design
5 Metal identification ring on each sling
6 Signed Registry Certificate with each sling

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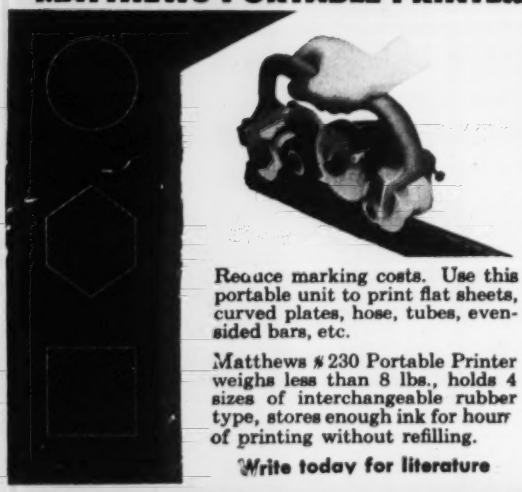

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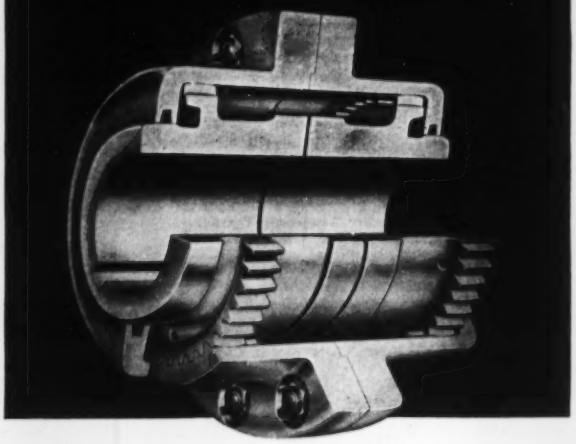

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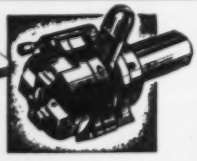

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European Mills Buying Scrap Here

Estimates place current exports from east coast ports around 100,000 tons. Movement gives market better tone in face of slow domestic demand

Scrap Prices, Page 142

Philadelphia—Export business continues to enliven the steel scrap market here. One cargo was recently loaded here and another is scheduled to leave shortly. According to some trade estimates more than 100,000 tons of scrap are being shipped abroad from along the eastern seaboard—tonnage recently moved or in process of being accumulated.

The scrap is moving principally to European countries, some of which only some months ago were shipping scrap to this country. However, a fairly good tonnage is going to South America, mostly to the Argentine.

Stocks in dealers' yards along the eastern seaboard have amounted until fairly recently to close to a half million tons. This figure, however, is only a rough trade estimate. But apparently, despite this surplus, scrap for export isn't coming out too freely.

Prices to domestic consumers are unchanged, as compared with a week ago.

New York—Reflecting a continued strong export market, New York brokers are paying around $20 for No. 1 heavy melting steel and No. 1 bundles for domestic account. Also, they have increased their price on No. 2 heavy melting to $17 to $18, and on No. 2 bundles to $13 to $14. They are paying still higher for tonnage destined for shipment abroad. All other prices are unchanged.

Chicago—A declining steelmaking rate—off 4 points to 65.5 per cent of capacity last week—leaves the scrap market here devoid of vigor. Because of the low level and little real hope of a pickup until after Labor Day, not enough scrap is being traded to test the market.

Pittsburgh — Steelmaking operations are low enough that scrap consumers continue to live off inventories. Little scrap is moving. Prices are steady in the absence of a sizable purchase.

Detroit—The scrap market here is at a virtual standstill and not much in the way of activity is expected until about Labor Day.

Cincinnati — Purchases of scrap have declined. One mill is closed for improvements. A second is not buying additional tonnage. The only change in prices is in random length rails which were reduced $1 to $35 to $36.

St. Louis — Scrap market continues slow and soft. Transactions are negligible except in the still-scarce rerolling rails. Posted quotes on cast and melting steel are nominal and subject to down-dickering.

Cleveland—Except for small tonnages, the movement of scrap in this market is so slow as to make it almost impossible to determine representative prices. For the present prices appear unchanged with No. 1 heavy melting generally considered $24 to $25. But all prices are practically nominal in the absence of active buying.

Brokers claim that the mills would have to pay much higher for scrap were they to enter the market for representative tonnage, some say up to $28 for No. 1 heavy melting. The reason for this is reluctance of dealers to dispose of material at currently quoted levels and the fact production scrap is coming out in relatively small volume with manufacturing operations off.

Los Angeles — Dealers view increased purchases of No. 1 bundles at $22 with mixed reactions. While some are hopeful the activity heralds a loosening of the scrap market, others say purchases are too limited to provide accurate yardsticks of the future.

San Francisco—No. 1 cupola cast

(*Please turn to page* 144)

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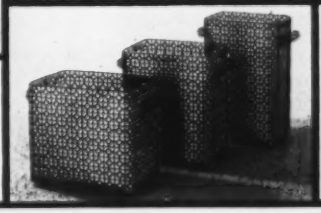

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IRON AND STEEL SCRAP

Consumer prices, per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

July 28	$27.33
July 21	27.33
June Avg.	27.92
July, 1953	43.51
July, 1949	19.21

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumer plant)

No. 1 heavy melting	28.00-29.00
No. 2 heavy melting	25.00-26.00
No. 1 bundles	28.00-29.00
No. 2 bundles	23.00-24.00
No. 1 busheling	28.00-29.00
Machine shop turnings	14.00-15.00
Mixed borings, turnings	14.00-15.00
Short shovel turnings	18.00-19.00
Cast iron borings	18.00-19.00
Cut structurals	29.00-30.00
Heavy turnings	26.00-27.00
Punchings & plate scrap	32.00-33.00
Electric furnace bundles	30.00-31.00

Cast Iron Grades

No. 1 cupola	*34.00-35.00*
Charging box cast	32.00-33.00
Heavy breakable cast	29.00-30.00
Unstripped motor blocks	23.00-24.00
No. 1 machinery cast	42.00-43.00

Railroad Scrap

No. 1 R.R. heavy melt	31.00-32.00
Rails, 2-ft and under	*43.00-44.00*
Rails, 18-in. and under	45.00-46.00
Rails, random lengths	37.00-38.00
Railroad specialties	34.00-35.00

Stainless Steel Scrap

(F.o.b. shipping point)

18-8 bundles & solids	165.00-170.00
18-8 turnings	85.00-90.00
430 bundles & solids	65.00-70.00
430 turnings	50.00-52.00

CLEVELAND

(Delivered consumer plant)

No. 1 heavy melting	24.00-25.00
No. 2 heavy melting	21.00-22.00
No. 1 bundles	24.00-25.00
No. 2 bundles	18.00-19.00
No. 1 busheling	24.00-25.00
Machine shop turnings	12.00-13.00
Mixed borings, turnings	16.00-17.00
Short shovel turnings	16.00-17.00
Cast iron borings	16.00-17.00
Low phos.	25.00-26.00
Cut structural plate 2 ft and under	31.00-32.00
Alloy free, short shovel turnings	16.50-17.50
Electric furnace bundles	25.00-26.00

Cast Iron Grades

No. 1 cupola	40.00-41.00
Charging box cast	26.50-27.50
Stove plate	33.00-34.00
Heavy breakable cast	25.50-26.50
Unstripped motor blocks	25.00-26.00
Brake shoes	29.00-30.00
Clean auto cast	42.00-43.00
No. 1 wheels	32.50-33.50
Burnt cast	27.00-28.00
Drop broken machinery	42.00-43.00

Railroad Scrap

No. 1 R.R. heavy melt	30.00-31.00
R.R. malleable	40.00-41.00
Rails, 3-ft and under	42.00-43.00
Rails, 18 in. and under	44.00-45.00
Rails, random lengths	39.00-40.00
Cast steel	33.00-34.00
Railroad specialties	34.00-35.00
Uncut tires	35.00-36.00
Angles, splice bars	41.00-42.00
Rails, rerolling	42.00-43.00

Stainless Steel

(F.o.b. shipping point)

18-8 bundles, solids	nom. 160.00-170.00
18-8 turnings	nom. 70.00-80.00
430 clips, bundles, solids	nom. 70.00
430 turnings	40.00-50.00

YOUNGSTOWN

(Delivered consumer plant)

No. 1 heavy melting	26.00-27.00
No. 2 heavy melting	21.00-22.00
No. 1 bundles	26.00-27.00
No. 2 bundles	19.00-20.00
Machine shop turnings	13.00-14.00
Short shovel turnings	19.00-20.00
Cast iron borings	19.00-20.00
Low phos.	29.00-30.00
Electric furnace bundles	27.00-28.00

Railroad Scrap

No. 1 R.R. heavy melt.	30.00-31.00

PHILADELPHIA

(Delivered consumer plant)

No. 1 heavy melting	24.50
No. 2 heavy melting	22.50
No. 1 bundles	25.00
No. 2 bundles	19.00-20.00
No. 1 busheling	24.50
Electric furnace bundles	25.00*
Machine shop turnings	14.00
Mixed borings, turnings	16.00
Short shovel turnings	18.00
Structurals & plate	29.00-30.00
Heavy turnings	22.00*
Couplers, springs, wheels	32.00
Rail crops, 2 ft & under	42.00

Cast Iron Grades

No. 1 cupola	35.00
Malleable	37.00
Heavy breakable cast	35.50
Unstripped motor blocks	nom.
Drop broken machinery	41.00

*Nominal.

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	*20.00*
No. 2 heavy melting	*17.00-18.00*
No. 1 bundles	*20.00*
No. 2 bundles	*13.00-14.00*
Machine shop turnings	5.00-6.00
Mixed borings, short turnings	8.00-9.00
Low phos. (structural & plate)	22.00-23.00
Short shovel turnings	9.00-10.00

Cast Iron Grades

No. 1 cupola	29.00-30.00
Unstriped motor blocks	19.00-20.00*

Stainless Steel

18-8 sheets, clips, solids	170.00-175.00
18-8 borings, turnings	70.00-75.00
430 sheets, clips, solids	40.00
410 sheets, clips, solids	30.00

*Nominal.

BOSTON

(Brokers' buying prices; f.o.b shipping point)

No. 1 heavy melting	17.50-18.00
No. 2 heavy melting	14.25-14.50
No. 1 bundles	17.50-18.00
No. 2 bundles	12.00-13.00
Mixed borings, turnings	6.50-7.00
Machine shop turnings	3.00-3.50
Short shovel turnings	8.50-9.00
No. 1 cast	29.00-30.00
Mixed cupola cast	27.00-28.00
No. 1 machinery cast	32.00-33.00

CINCINNATI

(Brokers' buying prices; f.o.b shipping point)

No. 1 heavy melting	25.00-26.00
No. 2 heavy melting	22.00-23.00
No. 1 bundles	25.00-26.00
No. 2 bundles	19.00-20.00
No. 1 busheling	25.00-26.00
Machine shop turnings	11.00-12.00
Mixed borings, turnings	14.00-15.00
Short shovel turnings	14.00-15.00
Cast iron borings	14.00-15.00
Low phos. 18-in.	32.00-33.00

Cast Iron Grades

No. 1 cupola	38.00
Heavy breakable cast	35.00
Charging box cast	36.00
Drop broken machinery	44.00

Railroad Scrap

No. 1 R.R. heavy melt.	29.00-30.00
Rails, 18-in. and under	43.00-44.00
Rails, random lengths	*35.00-36.00*

CHICAGO

No. 1 heavy melting	28.00-30.00
No. 2 heavy melting	26.00-27.00
No. 1 factory bundles	31.00-32.00
No. 1 dealer bundles	28.00-29.00
No. 2 bundles	22.00-23.00
No. 1 busheling	28.00-30.00
Machine shop turnings	12.00-13.00
Mixed borings, turnings	14.00-15.00
Short shovel turnings	14.00-15.00
Cast iron borings	14.00-15.00
Cut structurals, 3-ft	32.00-33.00
Punchings & plate scrap	32.00-33.00
Electric furnace bundles	31.00-32.00

Cast Iron Grades

No. 1 cupola	35.00-36.00
Stove plate	28.00-29.00
Unstripped motor blocks	24.00-25.00
Clean auto cast	37.00-38.00
Drop broken machinery	37.00-38.00

Railroad Scrap

No. 1 R.R. heavy melt.	*31.00-32.00*
R.R. malleable	40.00-42.00
Rails, 2-ft. and under	43.00-44.00
Rails, 18-in. and under	44.00-45.00
Angles, splice bars	37.00-38.00
Rails, rerolling	43.00-44.00

Stainless Steel Scrap

18-8 clips & solids	130.00-140.00
18-8 turnings	60.00
430 clips & solids	40.00
430 turnings	20.00-25.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	19.00
No. 2 heavy melting	17.00
No. 1 bundles	20.00
No. 2 bundles	15.00
No. 1 busheling	20.00
Machine shop turnings	*8.00*
Mixed borings, turnings	*8.00*
Short shovel turnings	*9.00*
Punchings & plate scrap	23.50

Cast Iron Grades

No. 1 cupola	33.00
Charging box cast	27.00
Stove plate	29.00
Heavy breakable	24.00
Unstripped motor blocks	18.00
Clean auto cast	37.00
Malleable	28.00

BUFFALO

No. 1 heavy melting	26.00-27.00
No. 2 heavy melting	22.00-23.00
No. 1 bundles	26.00-27.00
No. 2 bundles	20.00-21.00
No. 1 busheling	26.00-27.00
Machine shop turnings	13.00-14.00
Mixed borings, turnings	16.50-17.00
Short shovel turnings	17.50-18.00
Cast iron borings	16.50-17.00
Low phos.	28.00-28.50

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	37.00-38.00
No. 1 machinery	41.00-42.00

Railroad Scrap

Rails, random lengths	33.00-34.00
Rails, 3-ft and under	40.00-41.00
Railroad specialties	34.50-35.50

BIRMINGHAM

No. 1 heavy melting	23.50-24.50
No. 2 heavy melting	22.00-23.00
No. 1 bundles	18.00-19.00
No. 2 bundles	16.00-17.00
Cast iron borings	13.00-14.00
Short shovel turnings	16.00-17.00
Machine shop turnings	15.00-16.00
Electric furnace bundles	26.00-27.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	43.50-44.50
Stove plate	40.50-41.50
Bar crops and plate	29.00-30.00
Structural plate 2 ft	29.00-30.00
Unstripped motor blocks	35.00-36.00

Railroad Scrap

No. 1 R.R. heavy melt.	26.00-27.00
Rails, 18-in. and under	40.00-41.00
Rails, rerolling	39.00-40.00
Angles, splice bars	36.00-37.00
Stand. steel axles	35.00-36.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	25.50
No. 2 heavy melting	23.50
No. 1 bundles	25.50
No. 2 bundles	19.25
Machine shop turnings	11.00
Short shovel turnings	12.00

Cast Iron Grades

No. 1 cupola	37.00
Charging box cast	29.00
Heavy breakable cast	29.00
Unstripped motor blocks	29.00
Brake shoes	30.00
Clean auto cast	39.00
Stove plate	31.00

Railroad Scrap

No. 1 R.R. heavy melt	29.50
Rails, 18-in. and under	40.00
Rails, random lengths	37.00
Rails, rerolling	43.00
Uncut tires	32.50
Angles, splice bars	32.00

SEATTLE

(Delivered consumer plant)

No. 1 heavy melting	25.00
No. 2 heavy melting	21.00
No. 1 bundles	21.00
No. 2 bundles	16.00
No. 3 bundles	13.00
Machine shop turnings	11.50
Mixed borings, turnings	11.50
Short shovel turnings	11.50
Electric furnace, No. 1	32.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	30.00-35.00
Heavy breakable cast	25.00
Unstripped motor blocks	23.00
No. 1 wheels	21.00
Stove plate(f.o.b. plant)	28.00
Brake shoes	28.00

Railroad Scrap

(Delivered consumer plant)

Rails, random lengths	30.00-34.00

SAN FRANCISCO

No. 1 heavy melting	20.00
No. 2 heavy melting	16.00
No. 1 bundles	19.00
No. 2 bundles	16.00
No. 1 busheling	20.00
Machine shop turnings	5.00
Mixed borings, turnings	5.00
Short shovel turnings	9.00
Cast iron borings	9.00
Cut structurals	25.00
Heavy turnings	9.00
Punchings & plate scrap	25.00
Electric furnace bundles	19.00

Cast Iron Grades

No. 1 cupola	*43.00-46.00*
Charging box cast	35.00
Stove plate	37.00
Heavy breakable cast	36.00
Unstripped motor blocks	*30.00*
Brake shoes	35.00
Clean auto cast	39.00
No. 1 wheels	39.00
Burnt cast	23.00
Drop broken machinery	43.00

LOS ANGELES

No. 1 heavy melting	20.00
No. 2 heavy melting	16.00
No. 1 bundles	20.00
No. 2 bundles	16.00
Machine shop turnings	5.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	38.00-42.00

HAMILTON, ONT.

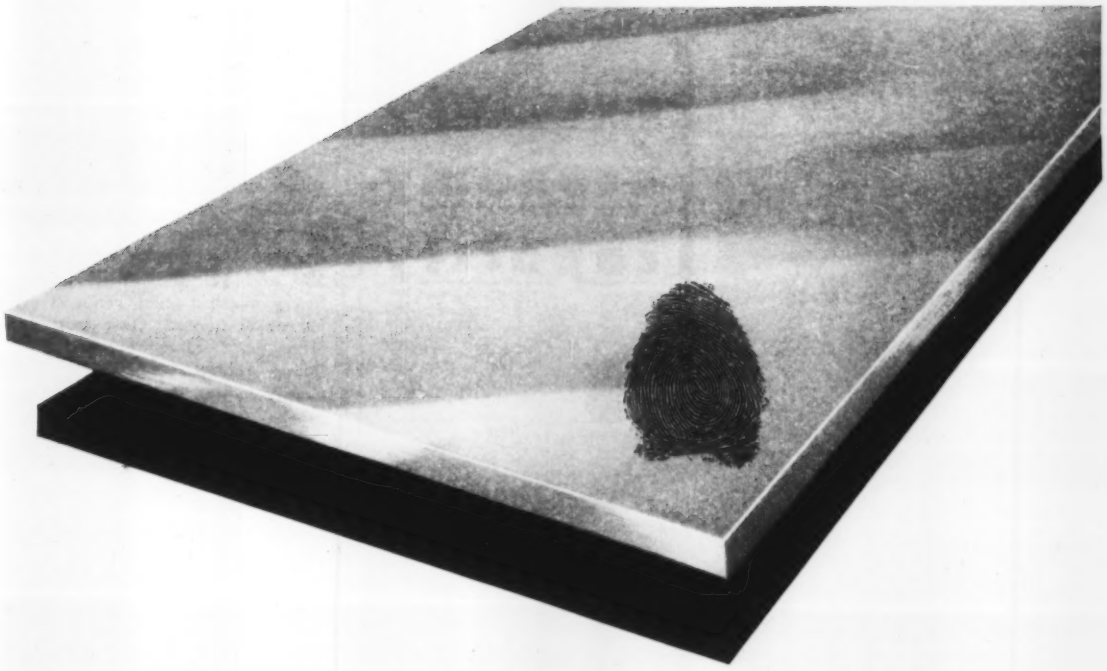
(Delivered prices)

No. 1 heavy melting	$22.00
No. 2 heavy melting	19.00
No. 1 bundles	22.00
No. 2 bundles	17.00
Mixed steel scrap	16.00
Mixed borings, turnings	12.00
Rails, remelting	32.00
Busheling, new factory: Prepared	20.00
Unprepared	16.00
Short steel turnings	12.00

Cast Iron Grades†

No. 1 machinery cast	42.00-45.00

†F.o.b., shipping point.



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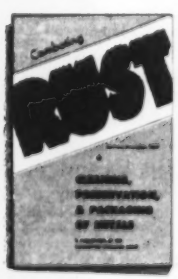

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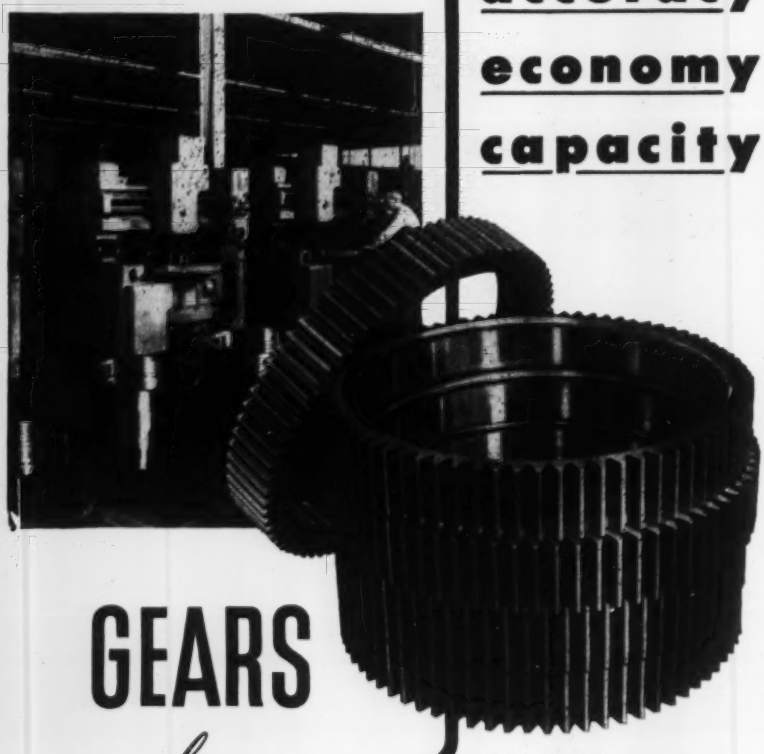
Ready to give you on-the-job service . . .

● This picture shows a part of Fairfield's Spur Gear Cutting Department where finest, new equipment is used to produce gears up to 1½ pitch, 36" dia.



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economy
capacity

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by Fairfield

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Here "under one roof" is everything needed to meet your most exacting gear requirements — metallurgical department, batteries of the most modern machines, testing laboratories, complete heat-treating facilities — all operated by skilled craftsmen working under expert engineering supervision.

Get acquainted with the Manufacturing Service Fairfield offers to makers of agricultural implements, road building machinery, machine tools, engines, trucks, tractors, and all kinds of powered equipment. ***Your inquiry will receive prompt attention — ask for interesting, illustrated bulletin.***

FINE GEARS
MADE TO ORDER

SPUR GEARS — Straight, helical, and internal. Sizes from 16 pitch, 1½" dia., to 1½ pitch, 36" dia.

HERRINGBONE—(*Follows Type*). Sizes from 1½" to 15".

SPIRAL BEVEL — Sizes from 16 pitch, 1½" dia., to 1½ pitch, 28" dia.

STRAIGHT BEVEL—Sizes from 16 pitch, 1½" dia., to 1½ pitch, 28" dia.

HYPOID—Sizes from 1½" to 28" dia.

ZEROL — Sizes from 16 pitch, 1½" dia., to 1½ pitch, 21" dia.

WORMS AND WORM GEARS—Worms to 7" dia. Worm gears to 36" dia.

SPLINED SHAFTS — Lengths to 52". Diameters from 1" to 6".

DIFFERENTIALS — 10,000 to 300,000 inch pounds capacity.

Note: All of the sizes above are approximate.

FAIRFIELD MANUFACTURING CO.

2313 South Concord Road • Lafayette, Indiana

(*Concluded from page* 141)

has moved up to $43 to $46 a ton and unstripped motor blocks have been advanced $1 a ton to $30. The latter grade has come into demand as supplies of the former have become somewhat limited.

Seattle—Steel scrap supplies are ample. Bundles are surplus and dealers report the market shaky, although $25 and $21 for No. 1 and No. 2 heavy melting steel, respectively, are currently quoted. Cast iron appears stronger. Dealers report $28 to $30 being quoted currently. While the supply is not tight, there is no surplus.

Exports from this area are out of the question under present conditions. Japan is suffering a dollar shortage and scrap prices in the Pacific Northwest are not competitive with those in California.

Pig Iron . . .

Pig Iron Prices, Page 134

Cleveland—Merchant pig iron market outlook in this immediate district is brightened by resumption of operations at foundries that had been down for vacations. While vacation suspensions are not completely over, most of the shops in this area are reported back in production, and at

(*Please turn to page* 146)

transformers
built to your specifications

Take advantage of our more than 40 years' experience in manufacturing and re-building industrial transformers. *Complete satisfaction guaranteed.*

Send us your specifications for prompt quotation

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Manufactured - Bought - Sold - Repaired

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CITY OF VANCOUVER

BRITISH COLUMBIA, CANADA

NOTICE TO CONTRACTORS

Demolition and Removal of the
Old Granville Bridge

SEALED TENDERS are invited from Contractors for the demolition and disposal of the old Granville Bridge over False Creek and Granville Island, Vancouver, B. C.

TENDERS WILL BE RECEIVED BY THE UNDERSIGNED NOT LATER THAN 9 A.M. SEPTEMBER 14th, 1954, AND SHALL BE MARKED "TENDER FOR DEMOLITION OF OLD GRANVILLE BRIDGE". TENDERS RECEIVED AFTER TIME NOTED WILL BE RETURNED UNOPENED.

Plans, Specifications, Form of Tender and other particulars may be obtained at the office of the City Engineer, City Hall, Vancouver, B. C. upon payment of the sum of Twenty-five Dollars ($25.00) which sum will be refunded on the return of the plans, specifications and other documents in good condition.

Each tender must be accompanied by the sum of $10,000.00 or in lieu thereof by a cheque duly certified by a Vancouver Branch of a Chartered Bank in Canada for the sum of $10,000.00, payable to the City of Vancouver, or by a bid bond of a Guarantee Company, authorized to carry on business in the Province of British Columbia, for payment to the City of Vancouver of the said amount, conditioned upon the due execution of a formal contract with the City of Vancouver satisfactory to the City Solicitor. The said sum of $10,000.00 or the amount of the said cheque or bond of the successful tenderer will be forfeited to the City of Vancouver aforesaid, should he decline or fail to enter into a contract for the work as aforesaid, within six days after being notified by the City Solicitor so to do.

The certified cheque or bond accompanying each unsuccessful tender will be returned to such tenderer upon the awarding of the contract to the successful tenderer.

The successful tenderer will be requested to furnish a performance bond for the sum of One Hundred Thousand Dollars ($100,000.00) in a form approved by the City Solicitor, conditioned upon the due and proper performance of the Contract. When the said performance bond has been furnished the said bid bond or cheque for Ten Thousand Dollars ($10,000.00) of the successful tenderer will be returned.

Tenders must follow the Form of Tender supplied by the City Engineer. The said tenders will be opened at 10. a.m. September 14, 1954, in the No. 1 Committee Room, City Hall, Vancouver, B. C.

The lowest or any tender not necessarily accepted.

RONALD THOMPSON,
CITY CLERK

City Hall,
Vancouver, British Columbia,
Canada
July 13th, 1954.

10 to 12 ft. lengths
ALL METALS
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Machine Screw Corp.
New Haven, Conn.
Makers of H & G Die Heads

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Well established, soundly financed company in New York suburban area needs man with 5 or more years responsible supervisory experience in erecting medium size automatic machinery on a production basis. Will supervise, through foreman, a work force of 75-90 erectors. Replies, which will be treated confidentially, should include names of companies worked for, their products and recent salary history.

Reply Box 998, STEEL

Penton Building Cleveland 13, Ohio

CLASSIFIED

Help Wanted

GENERAL SUPERINTENDENT

Small, financially strong, Ohio steel plate and alloy fabricating plant with long record of profitable operation has opening for man of highest type. Permanent position with unlimited opportunity for growth. Must be thoroughly experienced in code welding practice, maintenance, costs and able to organize production and get results. Enclose photograph and give full experience with references and salary bracket expected. Only fully qualified need apply. Reply Box 997, STEEL, Penton Building, Cleveland 13, Ohio.

METALLURGICAL ENGINEER

Man over 35 needed with technical and executive experience to administer laboratory and conduct technical service to customers and sales and production department of tube mill producing stainless and high alloy welded tubing. THE CARPENTER STEEL COMPANY, ALLOY TUBE DIVISION, Union, New Jersey.

QUALIFIED BLAST FURNACE SUPERINTENDENT or Assistant on single stack plant. Give experience, education and salary expected. Write in detail. Reply Box 978, STEEL, Penton Building, Cleveland 13, Ohio.

Positions Wanted

GENERAL or PLANT MANAGER—20 years' experience in fabrication of steel for buildings, bridges, and special structures. Experience includes, sales, engineering, purchasing as well as supervision of same plus supervision of production and field erection. Reg. Prof. Engr. Age 38. Desire position with progressive company in steel fabrication industry. Reply Box 995, STEEL, Penton Building, Cleveland 13, Ohio.

Middle Aged—DESIRES POSITION SALES OR OPERATING—Proven Record Production Sales and Proper Application of all Types of Rolls, especially intricate Shape Rolls. Wide Range of Experience in latest Methods of Machining all Types of Rolls especially Shape Rolls. Can furnish excellent reference if required. Reply Box 999, STEEL, Penton Building, Cleveland 13, Ohio.

PLANT MANAGER—M.I.T. Engineering Graduate with Proven Record in Plant Supervision and Control, Qualified as Production Manager or Chief Industrial Engineer. Reply Box 992, STEEL, Penton Building, Cleveland 13, Ohio.

Employment Service

SALARIED POSITIONS $5,000 to $35,000. We offer the original personal employment service (established 44 years). Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars. R. W. BIXBY, INC., 665 Brisbane Bldg., Buffalo 3, N.Y.

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FREIGHT CAR REPAIR PARTS
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Let us quote you on
STEEL OR ALUMINUM
parts or assemblies requiring:

BLANKING AND COLD FORMING
(Capacity: 24 to 500 tons—20'length)
12 press brakes • 1 hydraulic press
2 toggle presses

STAMPING, DRAWING, NOTCHING
(Capacity: 20 to 126 tons)
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blank sizes to 25½" x 32"

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(Capacity: 3/16" mild steel in 12' lengths)
10 power shears, most equipped with micrometer gauges

WELDING
spot and seam resistance welding
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pulsation controlled
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flow coat prime painting with 4' 6" x 12' conveyor opening
drying, spray enameling

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5 lift trucks (6000-pound capacity),
monorail hoists
ICRR siding

PLANT LOCATION
Memphis, Tennessee

SIZE: 75,000 square feet

TRANSPORTATION FACILITIES
5 barge lines, 17 rail lines, 82 motor freight carriers providing competitive service to all principal cities in America.

Send your blueprints and specifications to

SOUTHERN STATES
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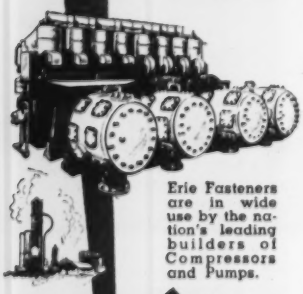
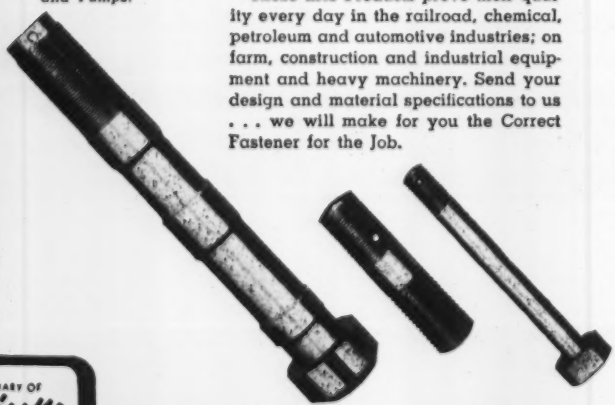
ERIE the correct fastener for the job!



Erie Fasteners are in wide use by the nation's leading builders of Compressors and Pumps.

You can rely on over 40 years of experience in producing bolts, studs and nuts designed to withstand the effects of high and low temperatures, high stresses, fatigue and corrosion. Modern facilities enable our skilled craftsmen to produce to your specifications bolts, studs and nuts, precision machined and heat treated in carbon, alloy, stainless steel and non ferrous metals.

These Erie Products prove their quality every day in the railroad, chemical, petroleum and automotive industries; on farm, construction and industrial equipment and heavy machinery. Send your design and material specifications to us . . . we will make for you the Correct Fastener for the Job.



A SUBSIDIARY OF Barium STEEL CORPORATION

ERIE BOLT and NUT CO.
ERIE • PENNSYLVANIA

STUDS • BOLTS • NUTS
ALLOYS • STAINLESS
CARBON • BRONZE

Representatives in Principal Cities.

(*Concluded from page* 144)

about the same operating level as when they closed.

Demand for pig iron has picked up slightly but no marked improvement in the movement of merchant iron is anticipated until later this month. Foundry order backlogs are reported running 5 to 6 weeks as against 6 to 7 a year ago. Chief difference is that current orders call for delivery over a more extended period than was the case a year ago.

Shops resuming production report a good many of the orders they are receiving for castings call for "rush" shipment, indicating that buyers' inventories are down.

Chicago — With the majority of gray iron foundries having ended their vacation shutdowns and resuming melting, demand for pig iron is expected to show a slight increase in August. However, this is more or less tongue-in-cheek opinion. Requirements for castings are light and July lethargy could carry through August.

Boston—Mild improvement in pig iron consumption is indicated by September. Increase in shipments will approximate extent of heavier orders for castings, most melters having adopted low inventory policy. In this they are supported by large and varied tonnage specifications available from stock at furnaces.

New York—Pig iron business in July was more disappointing than expected and, from present indications, August trading will show only modest gain. Actually, vacations will have a bearing right up to Labor Day, and that will be true not only of foundry operations, but of operations at other plants.

Philadelphia—The Chester, Pa. furnace, Barium Steel subsidiary, has been blown in after a suspension of many months. With pig iron demand at a low ebb and some blast furnaces down for lack of business, this development has created considerable speculation. Unquestionably, a portion of the stack's output will go to affiliated companies at Harrisburg, Pa., and Phoenixville, Pa., but how much will move to the merchant trade and at what price remains to be seen.

Last spring there was talk of resuming activity at Chester and basic iron was offered on a tentative basis at around $46, furnace, or $12 a ton under prices offered by other district furnaces.

Los Angeles—With foundry activity again soaring after a slowdown for vacations, backlogs extend beyond six weeks in many cases. First half foundry sales volume equaled that in the like period of 1953.

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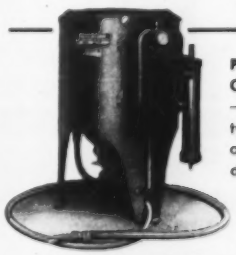
by don herold

COST-CUTTING STORY OF THE PANGBORN BLAST CLEANING MACHINE



Pangborn Blast Cleaning Machine—available in six types, stationary or portable—delivers efficient, low-cost maintenance in any plant. $1888 up.

For details, write: PANGBORN CORP., 1600 Pangborn Blvd., Hagerstown, Maryland.

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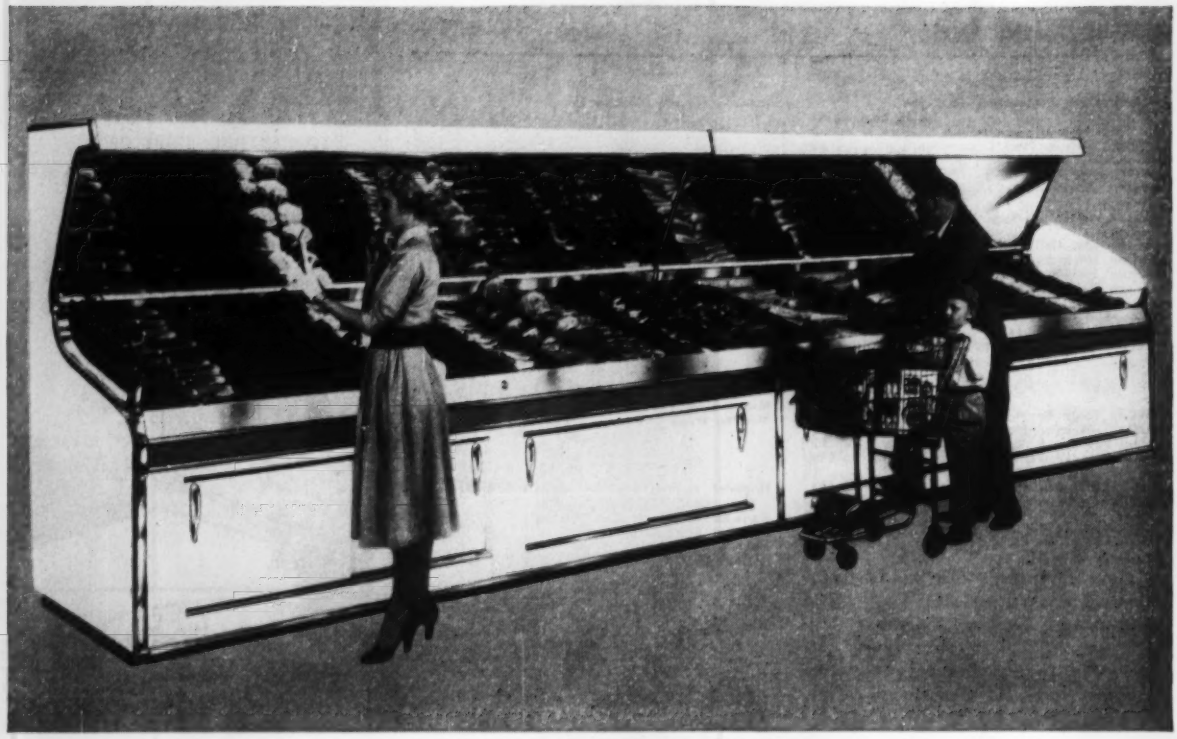
BLAST CLEANS CHEAPER
with the right equipment for every job

50th Anniversary Medallion



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Take these commercial refrigeration cabinets. C. V. Hill formerly trimmed them with molding that had to be burnished to get the right finish. Now they use Republic's Enduro Stainless Steel Strip, No. 2 Strip finish. There's no burnishing.

And they save 3 cents a foot.

Looks nicer, too. Lots of eye appeal. And easy to keep attractive because Enduro Stainless Steel can usually be cleaned with a simple soap and water rinse. There's no finish to flake or peel. Nothing to tarnish, because Enduro is stainless steel all the way through.

Republic can show you how to use Enduro Stainless Steel to best advantage. We have facts on how to fabricate it. What type to use. And where. A phone call will bring you in contact with one of our metallurgists. He'll take it from there. Have your secretary phone your nearest Republic District Office.

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GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N.Y.

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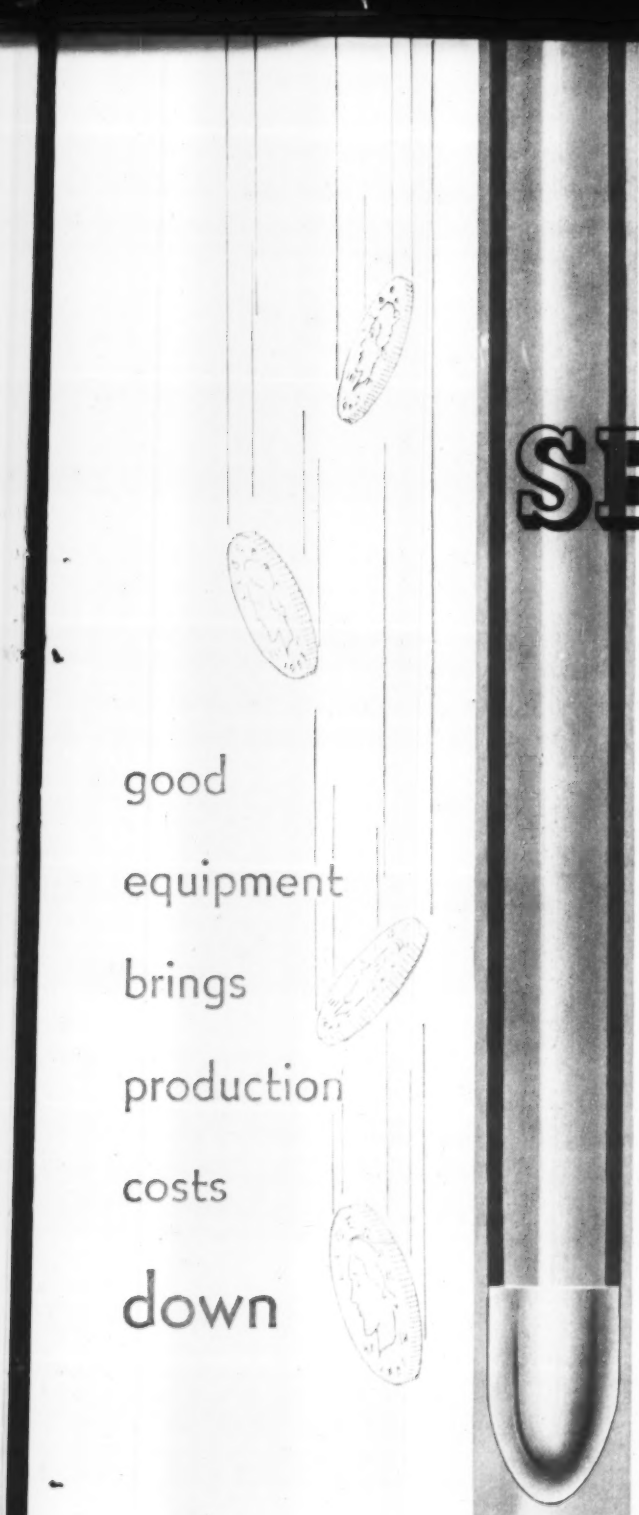
Other Republic Products include Carbon and Alloy Steels — Titanium — Pipe, Sheets, Strip, Bars, Wire, Pig Iron, Bolts and Nuts, Tubing



SEAMLESS TUBE MILLS

good equipment brings production costs down

Every improvement in seamless tube mill equipment has been developed by the combined efforts of the steel industry and Aetna-Standard. That's one reason why Aetna-Standard builds more seamless tube mills than all companies combined. If you contemplate adding tube facilities or revamping existing equipment, call in Aetna-Standard. Such data as costs, rates of production, amortization, equipment details, will give you good information on which to base a decision. **Only from Aetna-Standard can you obtain this authoritative guidance.**

THE AETNA-STANDARD ENGINEERING COMPANY • PITTSBURGH, PA.

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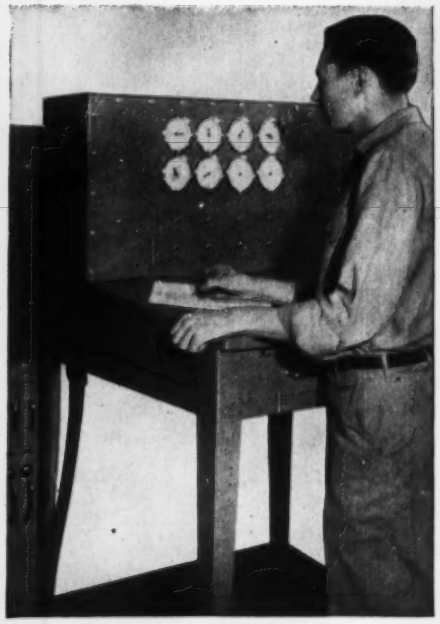
Why TIMKEN® forging steels give you uniform, high quality forgings

THIS MICROSCOPIC CHECK of your order makes sure that Timken® forging steels have uniform grain size after heat treatment. Result: higher ductility, higher impact. This is another example of the many ways the Timken Company controls quality at every step in production.



RIGIDLY CONTROLLED CHEMISTRY assures you of uniform composition in every forging bar. This spectrometer, for example, tells the exact composition of a melt in just 40 seconds. Results are flashed back to the furnace so the melter can maintain constant control of the heat analysis.

INDIVIDUAL HANDLING of your order enables us to target conditioning procedure to your forging requirements. Your forging rejects are minimized. And you save steel because the good dimensional tolerances of Timken bars produce uniform weight multiples with a minimum of steel lost in flashings.

YOU HAVE FEWER FURNACE ADJUSTMENTS when you use Timken forging steels. Every lot responds uniformly to heat treatment because every lot has the same physical and chemical properties. Always specify Timken forging steels. The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

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